

Installing and Maintaining ASN Routers and BNX Platforms

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Shielded-compliant cables must be used with this unit to ensure compliance with the Class A limits.

EN 55 022 Declaration of Conformance

This is to certify that the Bay Networks products in this book are shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022:1987 Class A (CISPR 22:1985/BS 6527:1988).

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This equipment is in the 1st category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines that are aimed at preventing radio interference in commercial and/or industrial areas.

Consequently, when this equipment is used in a residential area or in an adjacent area thereto, radio interference may be caused to equipment such as radios and TV receivers.

Compliance with the applicable regulations is dependent upon the use of shielded cables. The user is responsible for procuring the appropriate cables. Read instructions for correct handling.

Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 -- Règles et règlements

Note: L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service d'entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchement de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

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Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Notes explicatives du ministère des Communications: limites visant les accessoires

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service d'entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchement de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

T1 Service Compliance Statements

T1 Service

NOTE: This T1 Service notice applies to you only if you have received a single or dual port Multi-Channel T1 (MCT1) Link Module (which provides an internal CSU).

This equipment complies with Part 68 of FCC Rules. Please note the following:

1. You are required to request T1 service from the telephone company before you connect the CSU to a T1 network. When you request T1 service, you must provide the telephone company with the following data:
 - The Facility Interface Code
Provide the telephone company with both codes below:
 - 04DU9-B (1.544 MB D4 framing format)
 - 04DU9-C (1.544 MB ESF format)The telephone company will select the code it has available.
 - The Service Order Code: 6.0F
 - The required USOC jack: RJ48C
 - The make, model number, and FCC Registration number of the CSU.
2. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. The telephone company will notify you in advance of such changes to give you an opportunity to maintain uninterrupted telephone service.
3. If your CSU causes harm to the telephone network, the telephone company may temporarily discontinue your service. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible and will be informed of your right to file a complaint with the FCC.
4. If you experience trouble with the CSU, please contact Bay Networks Technical Response Center in your area for service or repairs. Repairs should be performed only by service personnel authorized by Bay Networks, Inc.

United States	1-800-2LAN-WAN
Valbonne, France	(33) 92-968-968
Sydney, Australia	(612) 9927-8800
Tokyo, Japan	(81) 3-5402-0180
5. You are required to notify the telephone company when you disconnect the CSU from the network and when you disconnect the BCNX or BLNX from the network.

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About This Guide

Read this guide if you are responsible for installing and maintaining the Bay Networks® Access Stack Node (ASN™). The information in this guide assumes that you have experience installing computer equipment.

This guide describes how to

- Install the ASN
- Stack and connect as many as four nodes
- Boot the ASN
- Interpret and respond to ASN status indicators
- Replace or add the following components, if necessary:
 - Flash memory card
 - Personal Computer Memory Card International Association Static RAM (PCMCIA SRAM).
 - Single inline memory modules (SIMMs)
 - Net modules
 - System board

For information on how to configure and operate the ASN, refer to *Quick-Starting Routers and BNX Platforms* (router software) or *Configuring an Interface for Network Management* (BayStream software).

Conventions

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: if command syntax is ping <ip_address>, you enter ping 192.32.10.12
bold text	Indicates text that you need to enter and command names in text. Example: Use the dinfo command.
brackets ([])	Indicate optional elements. You can choose none, one, or all of the options.
<i>italic text</i>	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book. Example: Protocols > AppleTalk identifies the AppleTalk option in the Protocols menu. Example: Pin 7 > 19 > 20
screen text	Indicates data that appears on the screen. Example: Set Bay Networks Trap Monitor Filters
separator (>)	Separates menu and option names in instructions and internal pin-to-pin wire connections.
vertical line ()	Indicates that you enter only one of the parts of the command. The vertical line separates choices. Do not type the vertical line when entering the command. Example: If the command syntax is show at routes nets , you enter either show at routes or show at nets , but not both.

Acronyms

ARP	Address Resolution Protocol
AUI	Attachment Unit Interface
BOOTP	Bootstrap Protocol
BRI	Basic Rate Interface
CCITT	International Telegraph and Telephone Consultative Committee (now ITU-T)
CTS	clear to send
DCD	data carrier detect
DCE	data communications equipment
DLCMI	Data Link Control Management Interface
DRAM	dynamic random access memory
DSR	data set ready
DTE	data terminal equipment
DTR	data terminal ready
EIA	Electronic Industries Association
FDDI	Fiber Distributed Data Interface
HDL	high-level data link control
HRPSU	high-power redundant power supply unit
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ITU-T	International Telecommunications Union–Telecommunications sector (formerly CCITT)
LAN	local area network
LED	light emitting diode
LMI	Local Management Interface
LQR	Link Quality Reporting
MCE1	Multichannel E1
MTU	maximum transmission unit
NBMA	nonbroadcast multi-access
NEMA	National Electrical Manufacturers Association
NVFS	Nonvolatile File System
OSI	Open Systems Interconnection

OSPF	Open Shortest Path First
PCMCIA	Personal Computer Memory Card International Association
PPP	Point-to-Point Protocol
PVC	permanent virtual circuit
RIP	Routing Information Protocol
SELV	safety extra-low voltage
SIMM	single inline memory module
SMDS	switched multimegabit data service
SNMP	Simple Network Management Protocol
SPEX	Stack Packet Exchange
SPEX-HS	Stack Packet Exchange Hot Swap
SRAM	Static Random Access Memory
TCP/IP	Transmission Control Protocol/Internet Protocol
TFTP	Trivial File Transfer Protocol
TNV	telecommunications network voltage
WAN	wide area network

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Customers can also purchase direct support from Bay Networks through a variety of service programs. As part of our PhonePlus™ program, Bay Networks Service sets the industry standard, with 24-hour, 7-days-a-week telephone support available worldwide at no extra cost. Our complete range of contract and noncontract services also includes equipment staging and integration, installation support, on-site services, and replacement parts delivery -- with response times ranging to 4 hours, depending on local country conditions.

To purchase any of the Bay Networks support programs, or if you have questions on program features, use the following numbers:

Region	Telephone Number	Fax Number
United States and Canada	1-800-2LANWAN; enter Express Routing Code (ERC) 290 when prompted (508) 916-8880 (direct)	(508) 670-8766
Europe	(33) 92-4-968-300	(33) 92-4-968-301
Asia/Pacific	(612) 9927-8800	(612) 9927-8811
Latin America	(561) 988-7661	(561) 988-7750

In addition, you can receive information on support programs from your local Bay Networks field sales office, or purchase Bay Networks support directly from your authorized partner.

Bay Networks Information Services

Bay Networks Information Services provide up-to-date support information as a first-line resource for network administration, expansion, and maintenance. This information is available from a variety of sources.

World Wide Web

The Bay Networks Customer Support Web Server offers a diverse library of technical documents, software agents, and other important technical information to Bay Networks customers and partners.

A special benefit for contracted customers and resellers is the ability to access the Web Server to perform Case Management. This feature enables your support staff to interact directly with the network experts in our worldwide Technical Response Centers. A registered contact with a valid Site ID can

- View a listing of support cases and determine the current status of any open case. Case history data includes severity designation, and telephone, e-mail, or other logs associated with the case.
- Customize the listing of cases according to a variety of criteria, including date, severity, status, and case ID.
- Log notes to existing open cases.
- Create new cases for rapid, efficient handling of noncritical network situations.
- Communicate directly via e-mail with the specific technical resources assigned to your case.

The Bay Networks URL is *<http://www.baynetworks.com>*. Customer Service is a menu item on that home page.

Customer Service FTP

Accessible via URL *<ftp://support.baynetworks.com>* (134.177.3.26), this site combines and organizes support files and documentation for the entire Bay Networks product suite. Central management and sponsorship of this FTP site lets you quickly locate information on any of your Bay Networks products.

Support Source CD

This CD-ROM -- sent quarterly to all contracted customers -- is a complete Bay Networks Service troubleshooting knowledge database with an intelligent text search engine.

The Support Source CD contains extracts from our problem-tracking database; information from the Bay Networks Forum on CompuServe; comprehensive technical documentation, such as Customer Support Bulletins, Release Notes, software patches and fixes; and complete information on all Bay Networks Service programs.

You can run a single version on Macintosh, Windows 3.1, Windows 95, Windows NT, DOS, or UNIX computing platforms. A Web links feature enables you to go directly from the CD to various Bay Networks Web pages.

CompuServe

For assistance with noncritical network support issues, Bay Networks Information Services maintain an active forum on CompuServe, a global bulletin-board system. This forum provides file services, technology conferences, and a message section to get assistance from other users.

The message section is monitored by Bay Networks engineers, who provide assistance wherever possible. Customers and resellers holding Bay Networks service contracts also have access to special libraries for advanced levels of support documentation and software. To take advantage of CompuServe's recently enhanced menu options, the Bay Networks Forum has been redesigned to allow links to our Web sites and FTP sites.

We recommend the use of CompuServe Information Manager software to access these Bay Networks Information Services resources. To open an account and receive a local dial-up number in the United States, call CompuServe at 1-800-524-3388. Outside the United States, call 1-614-529-1349, or your nearest CompuServe office. Ask for Representative No. 591. When you are online with your CompuServe account, you can reach us with the command **GO BAYNET**.

InfoFACTS

InfoFACTS is the Bay Networks free 24-hour fax-on-demand service. This automated system has libraries of technical and product documents designed to help you manage and troubleshoot your Bay Networks products. The system responds to a fax from the caller or to a third party within minutes of being accessed.

To use InfoFACTS in the United States or Canada, call toll-free 1-800-786-3228. Outside North America, toll calls can be made to 1-408-495-1002. In Europe, toll-free numbers are also available for contacting both InfoFACTS and CompuServe. Please check our Web page for the listing in your country.

How to Get Help

Use the following numbers to reach your Bay Networks Technical Response Center:

Technical Response Center	Telephone Number	Fax Number
Billerica, MA	1-800-2LANWAN	(508) 670-8765
Santa Clara, CA	1-800-2LANWAN	(408) 764-1188
Valbonne, France	(33) 92-4-968-968	(33) 92-4-966-998
Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Chapter 1

Installing the ASN

This chapter describes how to

- Prepare for installation
- Place the ASN
- Install the ASN in a rack
- Stack ASNs
- Set the slot ID
- Install the Flash memory or SRAM card
- Connect network cables
- Connect a console
- Connect a modem
- Connect to the power source

Overview of the ASN

The ASN is a multiprotocol router that provides network connectivity through the following net modules (I/O modules):

- 10Base-T Dual Ethernet
- 100Base-T Ethernet
- Dual Sync
- Dual Sync/ISDN BRI
- Quad BRI
- Single-mode, Multimode, and Hybrid FDDI
- Dual Token Ring
- MCE1
- Hardware compression (for use with the Dual Sync and Dual Sync/ISDN BRI net modules)

The ASN has four positions in which you can install net modules.

You can *stack* your ASNs, which means you can connect as many as four of them together to function as one logical router. Network management software treats all nodes in a stack as a single router, and considers each node a *slot*.

You can use either of the following net modules to connect as many as four ASNs together in a stack:

- Stack Packet Exchange (SPEX™) net module
- Stack Packet Exchange Hot-Swap (SPEX-HS) net module



Note: An ASN with a SPEX net module cannot run in the same stack as an ASN with a SPEX-HS net module.

When you use the SPEX-HS net module, you can turn off and remove any node in the stack without affecting the operation of the other nodes. When you use the SPEX net module, turning off a node brings down the entire stack. For more information, see “[Setting the Slot ID](#),” later in this chapter.

If you use a SPEX or SPEX-HS net module, your ASN can accommodate three other net modules.

The ASN offers dynamic random access memory (DRAM) configurations of 8, 16, and 32 megabytes (MB), as well as an optional Fast Packet Cache that enhances performance. An optional high-power redundant power supply unit (HRPSU) is also available. The HRPSU is an external power supply that you can connect to an ASN for continuous operation in the event of an internal power supply failure. For information about the external power supply, refer to *Installing and Maintaining the HRPSU*.



Note: This guide assumes you have an ASN model that is equipped with a back-panel connector for the external power supply, and a front-panel LED that gives the status of the external power supply. If you have an ASN model that does not support the external power supply, your ASN will look slightly different from the one shown in the illustrations.

Preparing for Installation

To prepare for installation, you should

- Verify that your ASN shipment is complete and undamaged
- Review the installation procedure to familiarize yourself with the steps you need to perform to complete the installation.

The following sections describe these tasks.

Verifying Shipment Contents

[Figure 1-1](#) shows the standard contents of every ASN shipment.

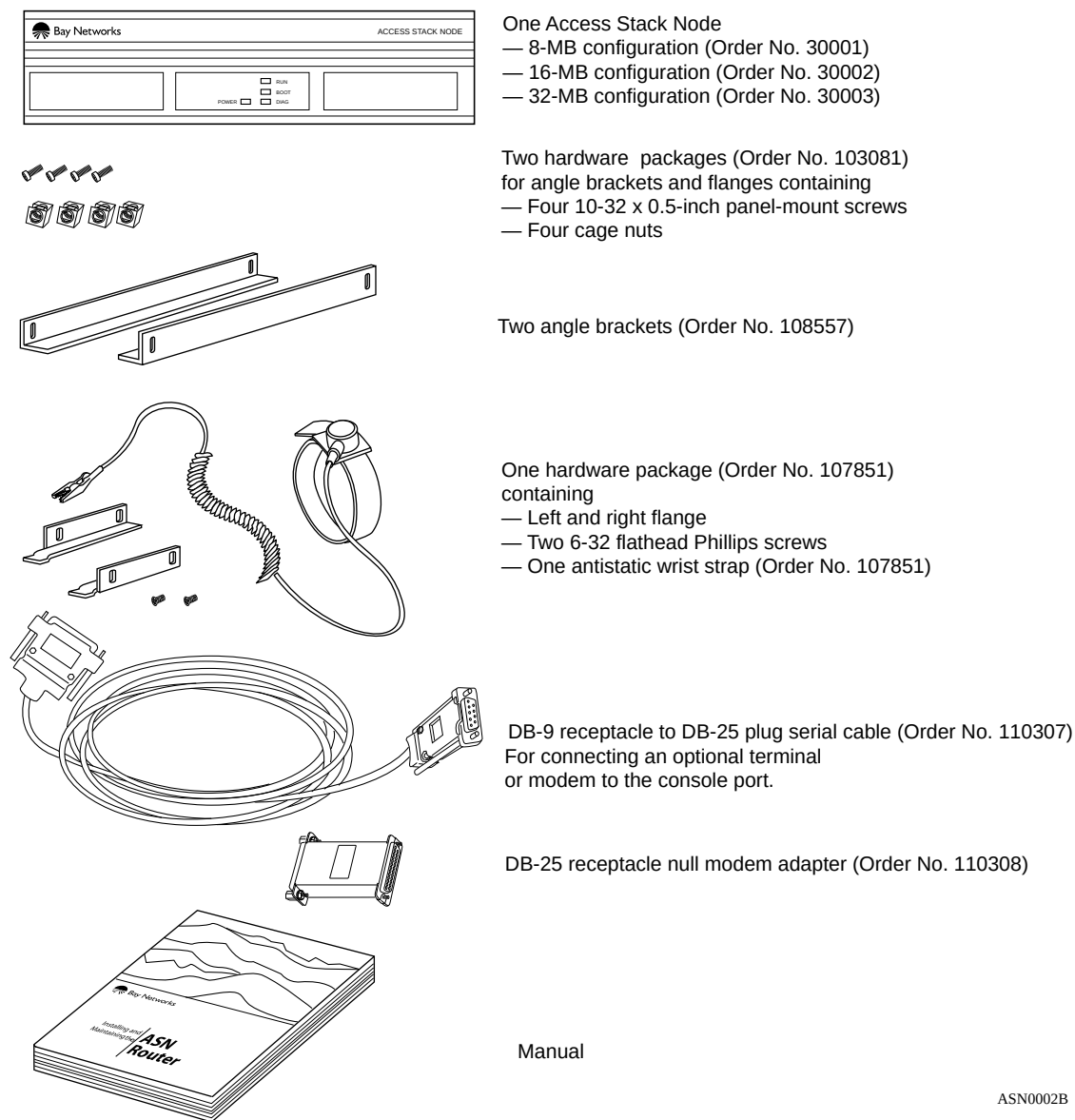
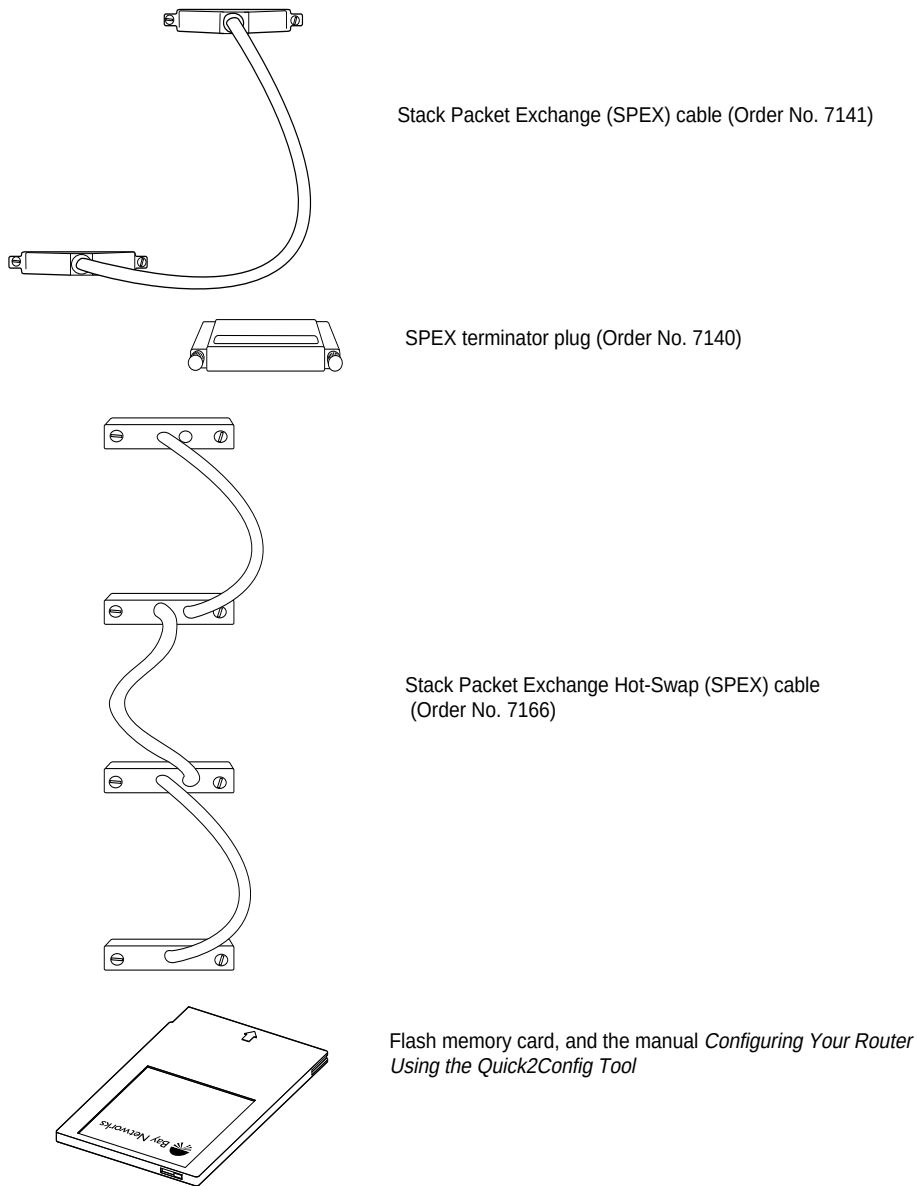


Figure 1-1. Standard Shipment Contents

Your shipment might also contain one or more of the optional components shown in [Figure 1-2](#).



ASN0003A

Figure 1-2. Optional Components

Verify that the items you received match those named in the packing list affixed to the shipping container. Also, make sure that you received any additional cables you ordered.



Caution: Inspect all items for damage that may have occurred during shipment. Ensure that the ASN front panel and the ports on the back panel are not damaged. If you detect damage, do not install the ASN. Contact your local Bay Networks Technical Response Center.

Reviewing the Installation Procedure

To install the ASN, you

1. Place the ASN in the desired location. If you do not plan to operate your ASN in a stack, go to Step 3.
2. If you plan to operate your ASNs in a stacked configuration, stack and connect the nodes together.
3. Set the slot ID.
4. Install the Flash memory card.
5. Connect all cables.
6. If required, connect a console or modem.

Ask your network administrator which software configuration option (Quick2Config™, EZ-Install, Netboot, Directed Netboot, or Local Boot) you should use to start the ASN on the network. You must connect a console to use Netboot, Directed Netboot, or Local Boot. Chapter 2 describes how to connect the ASN to the network using EZ-Install, Netboot, Directed Netboot, or Local Boot. Quick2Config is a Microsoft Windows-based application that you can use to create or modify configuration files. Refer to *Configuring Your Router Using the Quick2Config Tool* for more information.

7. Start the ASN on the network as described in Chapter 2.

Before you turn on the ASN, it is important to consult Chapter 2 to determine the procedure you should follow to start the ASN on your network.

The rest of this chapter describes in detail the procedures listed in Steps 1 through 6.

Placing the ASN

Before you place the ASN where you want it, make sure your installation site meets all spatial, electrical, and environmental requirements listed in Appendix D.

To set up the ASN, you can do one of the following:

- Install the ASN in an electronic enclosure rack as described in the next section.
- Place the ASN on a flat, sturdy surface in the chosen location. If you are stacking ASNs, refer to the installation manual that shipped with the net module. If you are not stacking ASNs, go to “Setting the Slot ID.”

If the ASN contains a **SPEX net module**, and you are not stacking nodes, you must insert a SPEX terminator plug (Order No. 7140) in both the IN and OUT ports of the net module. Do not use the SPEX cable to connect the IN port to the OUT port. If you do not have terminator plugs, remove the SPEX net module, as described in Chapter 3.

If the ASN contains a **SPEX-HS net module**, and you are not stacking nodes, you must attach one of the connectors on the SPEX-HS cable (Order No. 7166) to Port A on the net module. If you do not have a SPEX-HS cable, remove the SPEX-HS net module (refer to Chapter 3).

Installing the ASN in a Rack

This procedure requires

- Angle brackets, flanges, mounting screws, and cagenuts shipped with the ASN
- A Phillips screwdriver.
- An electronic enclosure rack that meets the specifications listed in Appendix D.

To install the ASN in a rack:

- 1. Measure at least 5.25 in. (13.3 cm) of free vertical space inside the rack.**

If you plan to stack nodes, multiply 5.25 in. by the number of nodes in the stack. Then make sure the rack has enough (contiguous) free vertical space for the stack.

2. **Locate the nearest two rail holes, below the area you just measured, that are 0.50 in. (1.27 cm) apart.**

The hole in the flange that you install on the ASN in Step 4 will align with the rail holes as shown in [Figure 1-3](#).

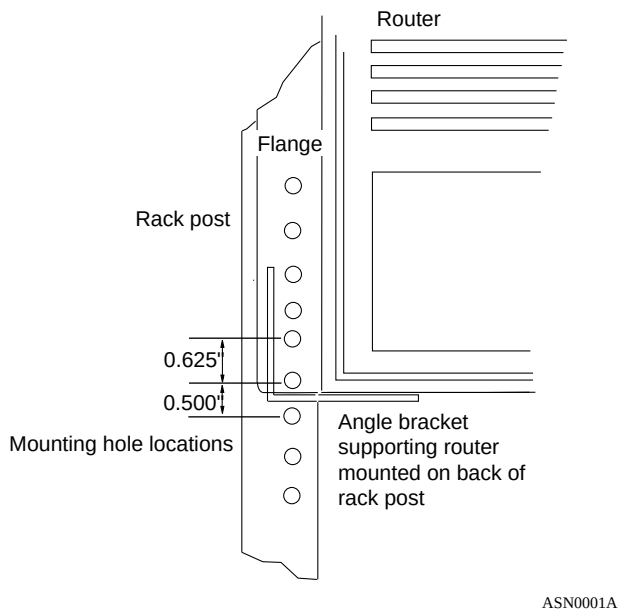
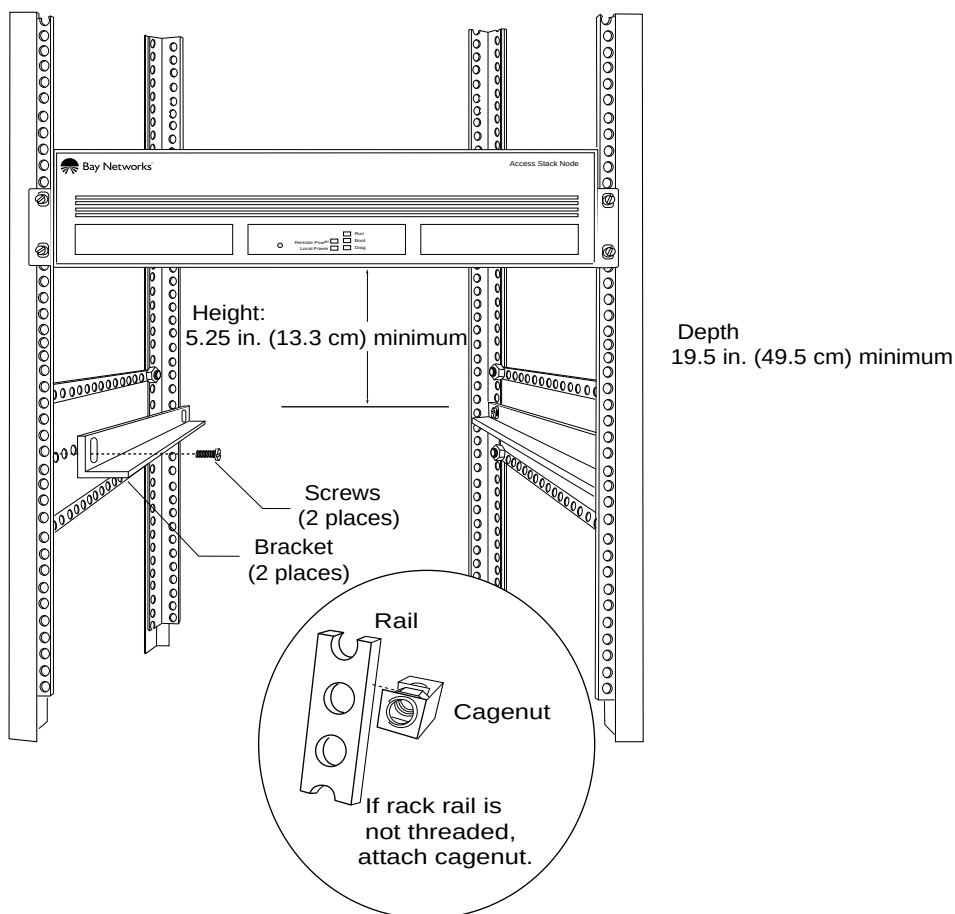


Figure 1-3. Locating the Mounting Holes

3. **Insert each angle bracket inside the rack in the area indicated in [Figure 1-4](#).**
 - a. **If there are no threads in the rail holes where you will attach the angle brackets, insert four cagenuts over the holes.**
 - b. **Align the edge of the bracket to the rack.**
If the interior of the rack has horizontal bracket supports, align the angle brackets with the supports. Otherwise, brace the angle brackets between the side rails.
 - c. **Insert a 10-32 screw through the slots at each end of the bracket and into the holes in the rack supports. Do not tighten the screws.**

- d. Adjust each bracket vertically along the bracket slots until the bracket is 0.78 in. (1.98 cm) below the center of one hole in the front vertical support of the rack.
- e. Tighten the screws with a Phillips screwdriver.



ASN0004A

Figure 1-4. Attaching Angle Brackets

4. **Attach each flange to the ASN (Figure 1-5) as follows. The kit contains left and right rackmount flanges.**
 - a. **Slide the tray out of the ASN enclosure approximately 4 inches to allow the flanges to be attached.**
 - b. **Insert flange into the slot on the appropriate side of the chassis.**
 - c. **Align countersunk hole in the flange with the threaded hole in the chassis.**
 - d. **Insert a flathead #6 Phillips screw into the flange and tighten it with a Phillips screwdriver.**



Note: If you want to mount the ASN backward, use the optional mounting feature at the back of the ASN.

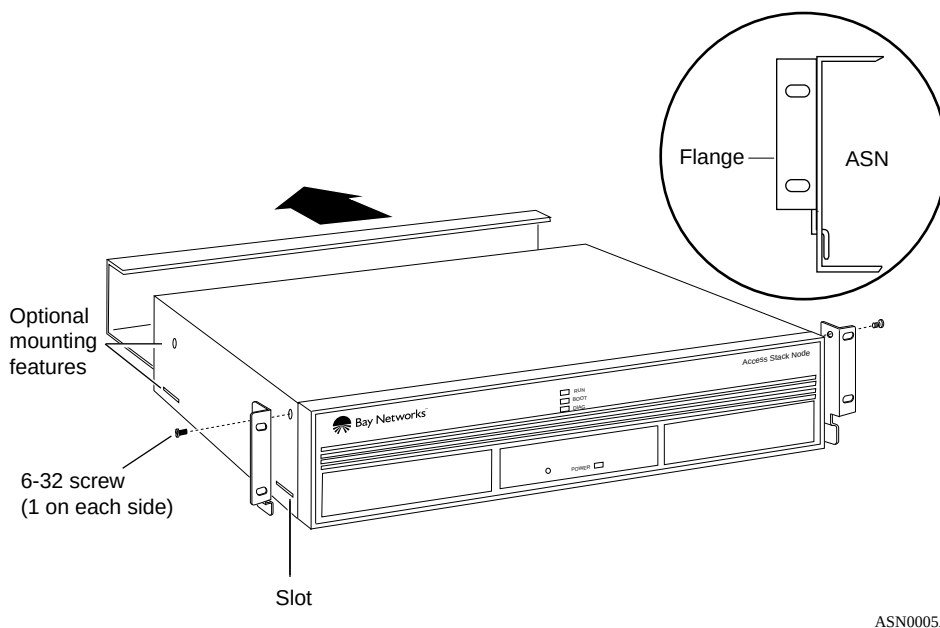
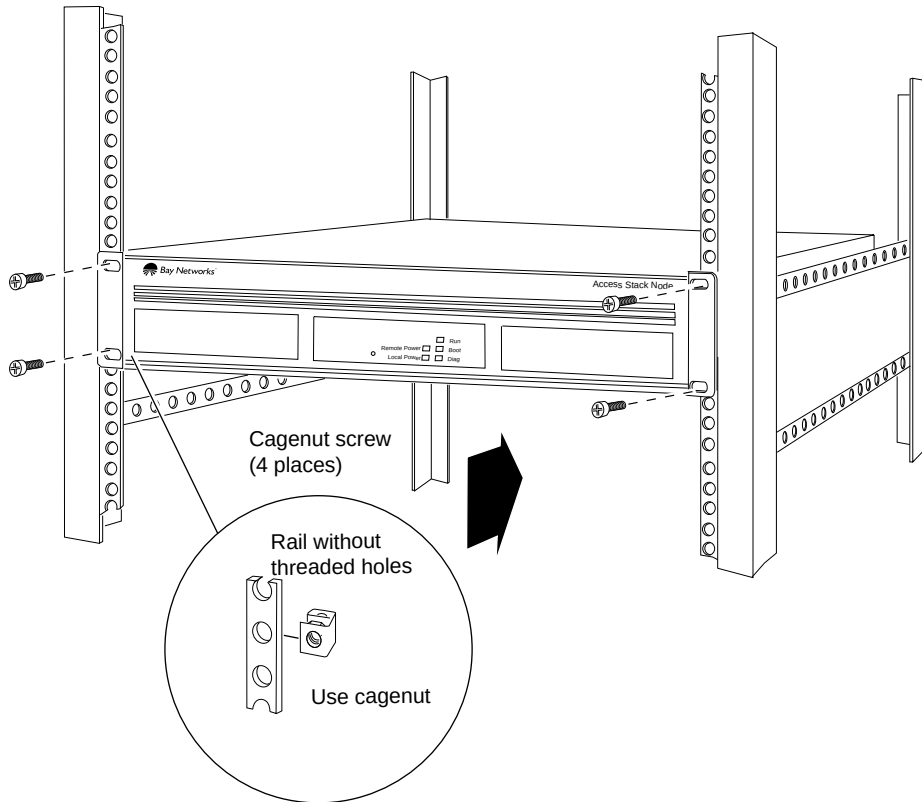


Figure 1-5. Attaching Flanges to the ASN

5. **Place the ASN on the angle brackets in the rack. Align the flange holes with the holes in the front vertical supports on the rack ([Figure 1-6](#)).**

If the rack holes are *not threaded*, place cagenuts over them.



ASN0006A

Figure 1-6. Installing the ASN in an Enclosure Rack

6. **Insert a 10-32 screw through each flange hole and into the corresponding holes in the front vertical supports of the rack.**
7. **Tighten the screws with a Phillips screwdriver.**

If you are stacking nodes, refer to the installation manual that shipped with the net module for information on attaching cables to the net module.

If you are not stacking nodes, go to the section “[Setting the Slot ID](#).”

If the ASN contains a **SPEX net module**, and you are not stacking nodes, you must insert a SPEX terminator plug (Order No. 7140) in both the IN and OUT ports of the net module. Do not use the SPEX cable to connect the IN port to the OUT port. If you do not have terminator plugs, remove the SPEX net module, as described in the installation that shipped with the net module.

If the ASN contains a **SPEX-HS net module**, and you are not stacking nodes, you must attach one of the connectors on the SPEX-HS cable (Order No. 7166) to Port A on the net module. If you do not have a SPEX-HS cable, remove the SPEX-HS net module, as described in the installation manual that shipped with the net module.

Setting the Slot ID

You must set (or at least verify) the slot ID on an ASN. Later, when you customize the router’s configuration file, it is critical that you configure the correct slot. If the configuration file does not match the slot ID, the node will not operate properly.

To edit a configuration file, see *Configuring Routers* (router software) or *Getting Started with Site Manager* (BayStream software).

If you are not operating the ASN in a stack, you need only verify the slot ID. Figure [1-7](#) shows the location of the slot ID selector. Typically, a single ASN should have a slot ID of 1; however, the ID can be any number from 1 through 4. If you decide to edit the router’s configuration file, you will need to know the router’s slot ID.

If you stacked your ASNs, you must set the slot ID to a unique number (1 through 4) on each ASN in the stack. You should set the slot ID of the ASN at the bottom of the stack to 1. Then increase the slot ID number of each ASN above it by 1. You set the slot ID using the slot ID selector on the back of the unit ([Figure 1-7](#)).



Caution: If two or more nodes in a stack share the same slot ID, errors can occur, and the nodes will act unpredictably. To change the slot ID, you must turn off all the nodes in the stack.

To set the slot ID:

1. **Insert a small screwdriver in the opening in the center of the slot ID selector (Figure 1-7).**

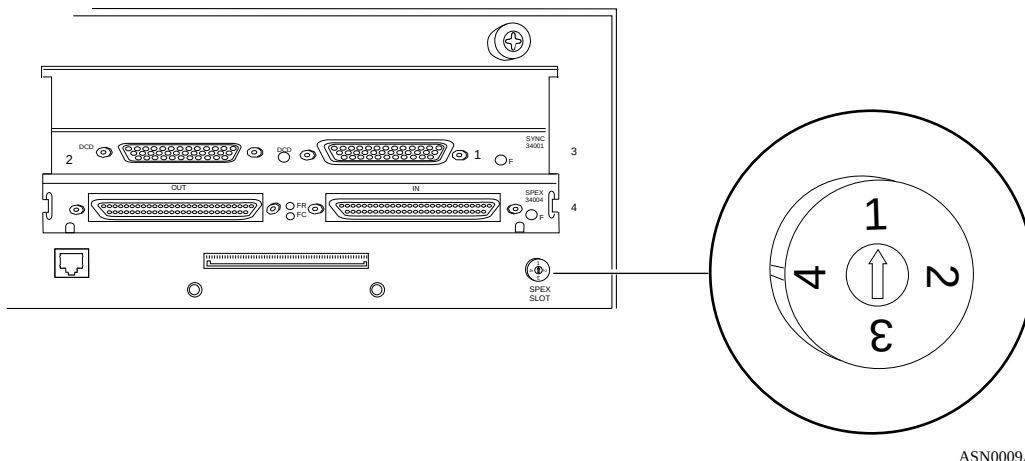


Figure 1-7. Slot ID Selector

2. **Turn the selector in either direction so that the arrow on the selector points to the slot ID you want to use.**

After you set the slot ID, install the Flash memory card.

Installing the Flash Memory or SRAM Card

BNX software requires the presence of at least one PCMCIA SRAM card to collect billing and/or performance data. Use the procedures described in this section to install PCMCIA SRAM cards.

The ASN uses a Flash memory card to provide storage for the router's nonvolatile file system (NVFS). When you remove a formatted memory card, the NVFS removes access to the card. When you insert and format a card (or insert a formatted card), the NVFS automatically provides access to the card. In order to boot, your ASN needs a Flash card with a valid boot image and configuration file.

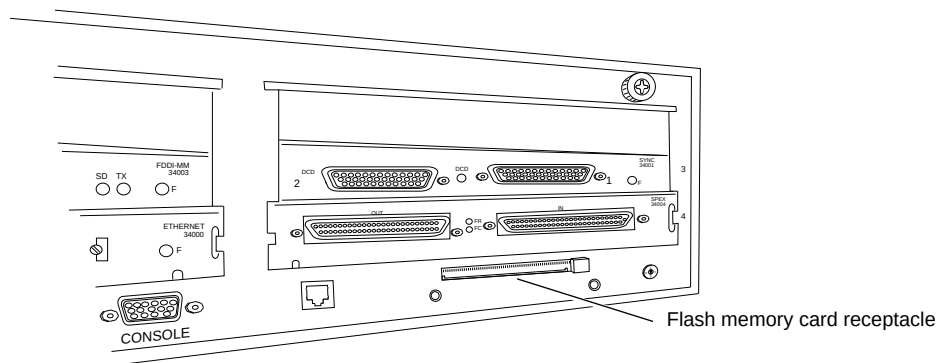
If you are not stacking nodes, you must use one Flash memory card (with a valid boot image and configuration file) per ASN. If you are stacking nodes, you must use at least one card per stack; however, you can install additional cards in the stack for redundancy or added storage.



Note: If you use more than one Flash memory card in a stack, the cards must have identical default boot images and default configuration files.

When you first install an ASN, you must install the Flash memory card before you turn on the ASN (or the ASNs in the stack). The card must have a valid boot image and configuration file, and must be in the ASN before (and while) the node boots. After an ASN finishes booting and is running, you can remove the card or install another card.

[Figure 1-8](#) shows the location of the Flash memory card receptacle. Your ASN comes with a Flash memory card cover panel (shown in [Figure 1-9](#)) installed over the receptacle.



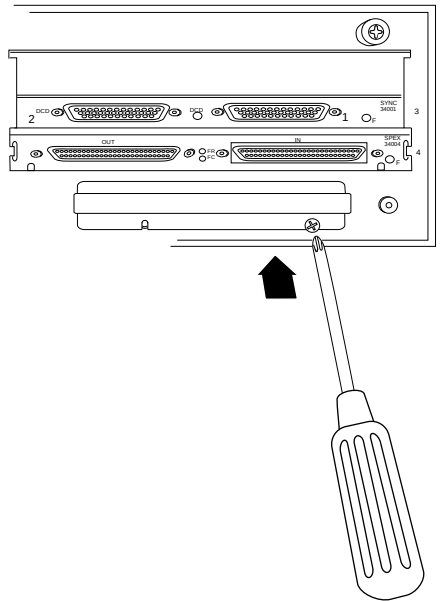
ASN0010A

Figure 1-8. Locating the Flash Memory Card Receptacle

To install the Flash memory card:

1. **Remove the panel covering the memory card receptacle at the back of the ASN ([Figure 1-9](#)).**

Use a Phillips screwdriver to loosen the two screws on the panel. Then slide the panel up to remove it from the ASN.



ASN0014A

Figure 1-9. Accessing the Memory Card Receptacle

2. **Position the card with the label facing up and the INSERT arrow pointing toward the card receptacle. Insert the card into the receptacle, and gently push the card until it fits snugly into place.**
3. **Install the Flash memory cover panel.**

Tighten the two screws that hold the panel in place (refer to [Figure 1-9](#)).

After you install the Flash memory card, connect all cables as described next.

Connecting Network Cables

To connect network cables to the ASN:

1. **Make sure the power switch on the ASN back panel is in the OFF position.**
2. **Connect the appropriate network cables to the ports on the net modules in your ASN. Connect the other ends of the network cables to the physical networks.**



Note: If you are stacking nodes, you must connect a power cable to each node in the stack.

After you connect the cables, you can connect a console to the ASN as described in the next section.

Connecting a Console

You can connect an ASN to an ANSI console or to a PC to establish a local Technician Interface session.

To determine whether you need to connect a console to the ASN, ask your network administrator which software configuration option (Quick2Config, EZ-Install, Netboot, Directed Netboot, or Local Boot) is best for your site.

Chapter 2 describes how to connect the ASN to the network using EZ-Install, Netboot, Directed Netboot, and Local Boot. Refer to *Configuring Your Router Using the Quick2Config Tool* for information about Quick2Config software. You must connect a console to the ASN to use Netboot, Directed Netboot, or Local Boot.

Although you do not need a console or modem connection to use EZ-Install, we strongly recommend it so that you can enter commands to the ASN and view messages.



Note: If you stacked your nodes, you can connect a console or modem to each node in the stack; however, a single console or modem can control the whole stack. You can connect any combination of consoles or modems. For example, in a stack of four nodes, you might connect consoles to two nodes and modems to two nodes.

Complete the steps in one of the following sections:

- [Connecting a Terminal Console](#)
- [Connecting a PC Console](#)

Connecting a Terminal Console

To connect a terminal console, you need the following items shipped with your ASN:

- Serial console/modem cable with 9-pin receptacle to 25-pin plug connectors (Order No. 110307)
- Null modem crossover adapter with two 25-pin receptacle connectors (Order No. 110308).

Once you have the appropriate equipment:

1. **Turn on and configure the console, using the parameters in [Table 1-1](#).**

Refer to the console user manual for instructions.

Table 1-1. Console Parameters

Parameter	Value
Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	None

2. **Turn off the console.**

3. **Attach the null modem crossover adapter to the 25-pin cable connector** ([Figure 1-10](#)).
4. **Insert the screws on the cable connector into the receptacle on the adapter connector and tighten each screw.**

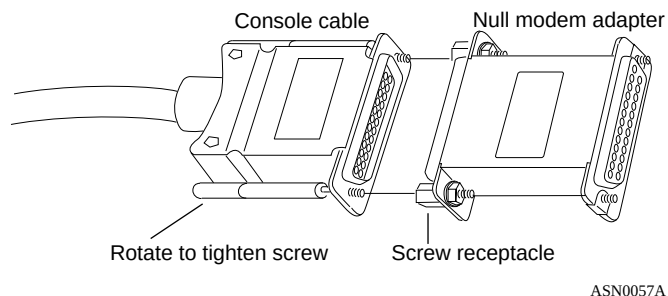


Figure 1-10. Attaching the Modem Adapter to the Console Cable

5. **Insert the 9-pin receptacle end of the console cable into the CONSOLE port on the ASN back panel** ([Figure 1-11](#)).

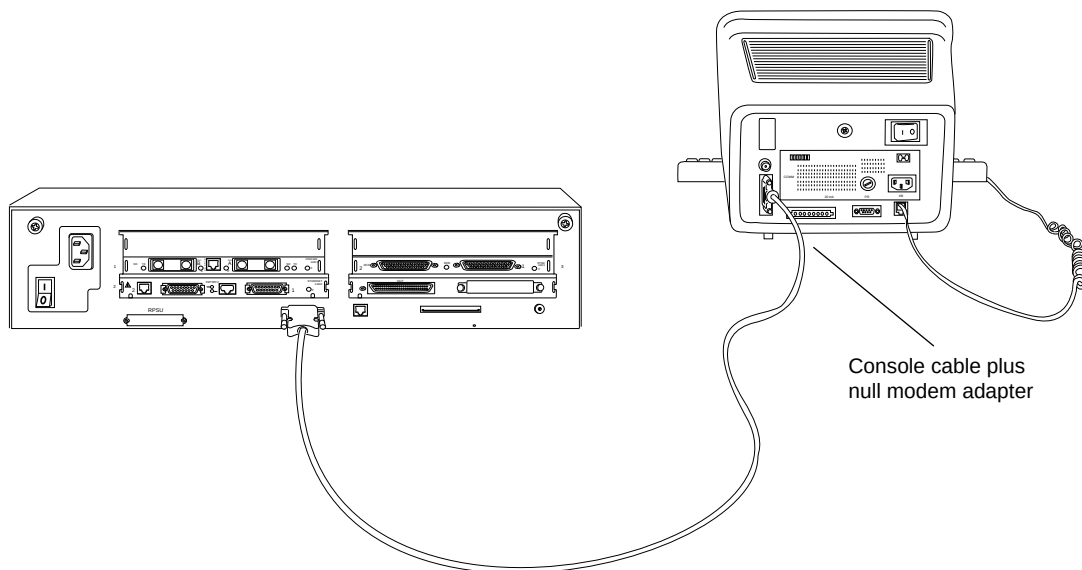


Figure 1-11. Connecting a Terminal Console to the ASN

6. Attach the 25-pin receptacle connector on the combined cable and adapter to the terminal's host connector.

After you connect a terminal console, go to Chapter 2 for instructions on starting the ASN on the network.

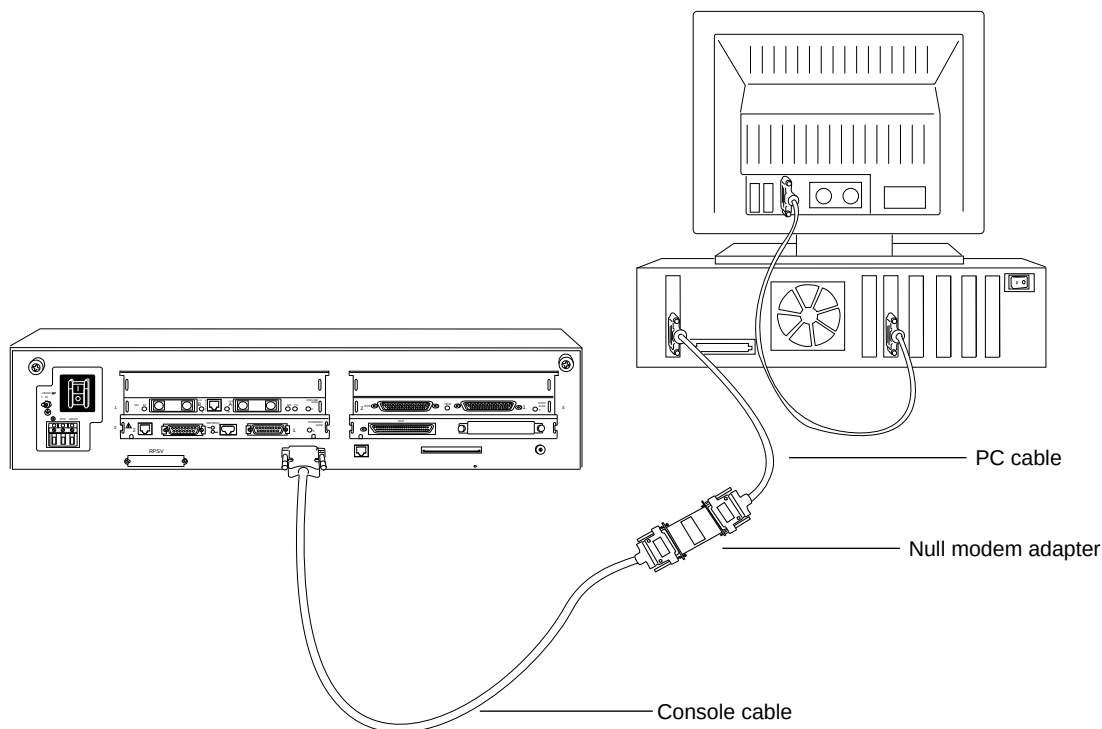
Connecting a PC Console

To connect a PC, you need the following items shipped with your ASN:

- Serial console/modem cable with 9-pin receptacle to 25-pin plug connectors (Order No. 110307)
- Null modem crossover adapter with two 25-pin receptacle connectors (Order No. 110308)

You also need another standard AT serial cable with a 25-pin plug connector. Once you have the appropriate equipment:

1. Insert the 9-pin receptacle end of the console cable into the CONSOLE port on the ASN back panel ([Figure 1-12](#)).



ASN0059A

Figure 1-12. Connecting a PC Console to the ASN

2. Attach the null modem crossover adapter to the other end of the console cable (refer to [Figure 1-10](#)).
3. Attach the 25-pin receptacle end of the cable-plus-adapter to the PC console cable's 25-pin plug connector.
4. Connect the complete cable unit to the communications port at the back of the PC ([refer to Figure 1-12](#)).

After you connect a PC console, go to the section “Connecting to the Power Source.”

Connecting a Modem

This section describes how to cable your ASN to a modem if you need remote dialin access to the Bay Networks Technician Interface.

Contact your network administrator to find out which software configuration option (Quick2Config, EZ-Install, Netboot, Directed Netboot, or Local Boot) you should use to start the ASN on the network.

Chapter 2 describes how to connect the ASN to the network using EZ-Install, Netboot, Directed Netboot, or Local Boot. Refer to *Configuring Your Router Using the Quick2Config Tool* for information about Quick2Config software.

If you plan to use EZ-Install, you can connect a modem to the ASN before or after you connect the ASN to the network. Netboot, Directed Netboot, and Local Boot require a console connection first.

After the ASN is on the network, you can replace the console connection with a modem connection.



Note: If you stacked your nodes, you can connect a console or modem to each node in the stack; however, a single console or modem can control the whole stack. You can connect any combination of consoles or modems. For example, in a stack of four nodes, you might connect consoles to two nodes and modems to two nodes.

To connect a modem to the ASN, you need

- An AT (or Hayes) compatible modem
- The modem cable shipped with your ASN (Order No. 110307)

Once you have the appropriate equipment:

1. **Turn on and configure the modem, using the parameters in [Table 1-2](#).**

Refer to the modem user manual for instructions.

Table 1-2. Modem Parameters

Parameter	Value
Baud Rate	9600 (or less)
Auto Answer	Set on <i>n</i> rings with DTR active. (The value <i>n</i> must be greater than 0. If set to 0, Auto Answer is disabled.)
Clear to Send (CTS) signal	Always on
Data Terminal Ready (DTR) signal	DTR signal fail-disconnect enabled (return to command mode, Auto Answer off).
Data Carrier Detect (DCD) signal	DCD signal on while carrier present. (The ASN uses DCD to detect modem disconnect.)
Local Character Echo	Off
Supervisory Functions	Off
Data Set Ready (DSR) signal	On

2. **Turn off the modem.**
3. **If you have not already done so, remove the console cable from the CONSOLE port on the ASN back panel.**
4. **Insert the 9-pin receptacle end of the modem cable into the CONSOLE port of the ASN ([Figure 1-13](#)).**

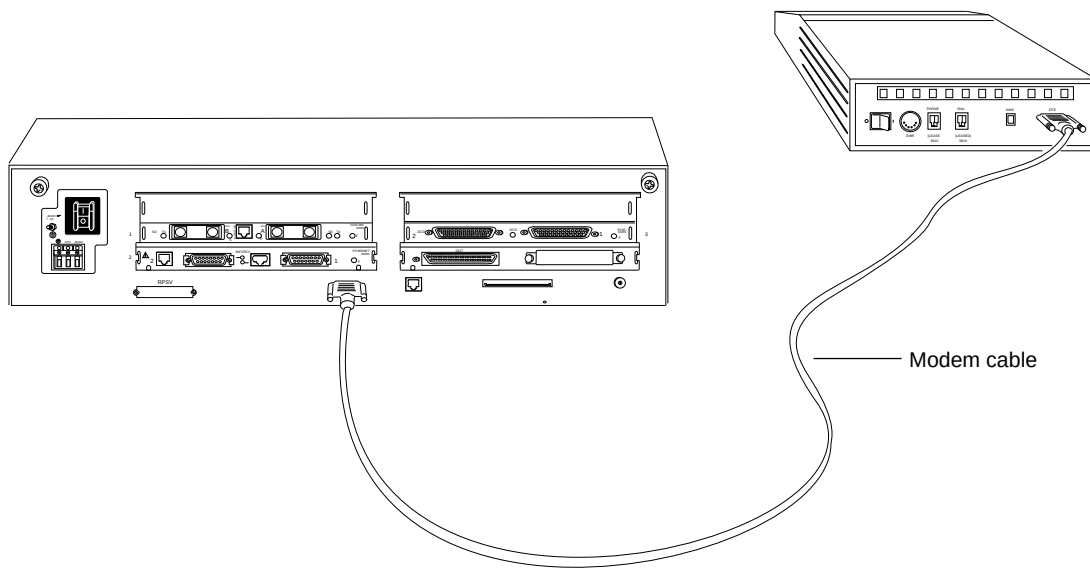


Figure 1-13. Connecting a Modem to the ASN

5. **Insert the 25-pin plug at the other end of the modem cable into the modem's RS-232 data communications port.**

The modem is now connected to the ASN.

Connecting to the Power Source

To connect the ASN to the power source:

1. **Ensure that the power switch is in the OFF (0) position.**
2. **Connect the power cable's input end to the ac receptacle on the ASN back panel.**
3. **Connect the other end of the power cable to an ac power outlet.**

Refer to Chapter 2 for instructions on starting the ASN on the network using EZ-Install, Netboot, Directed Netboot or Local boot configuration options. Refer to *Configuring Your Router Using the Quick2Config Tool* for information about Quick2Config software.

Connecting the HRPSU to the ASN

To connect the optional high-power redundant power supply unit (HRPSU) to the ASN:

1. Use a Phillips screwdriver to remove the two screws that hold the HRPSU cover plate in place ([Figure 1-14](#)).
2. Refer to *Installing and Maintaining the HRPSU* for instructions on installing the HRPSU and connecting it to your ASN.

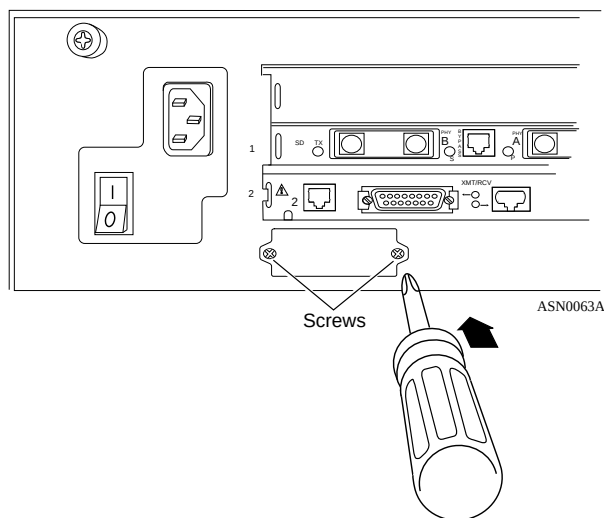


Figure 1-14. Removing the HRPSU Cover Plate

Chapter 2

Starting the ASN

This chapter describes how to

- Understand the ASN boot options
- Start an ASN for the first time
- Use EZ-Install
- Use Netboot
- Use Directed Netboot
- Use Local Boot (the Quick-Start procedure)

Understanding the ASN Boot Options

[Table 2-1](#) provides an overview of the different ways you can boot an ASN.

Table 2-1. ASN Boot Options

Boot Option	Description
EZ-Install	The network automatically supplies the configuration information necessary to boot the router. You do not need a console or modem connection for this procedure. For EZ-Install to succeed, your network administrator must have already configured the network (as described in <i>Connecting ASN Routers and BNX Platforms to a Network</i>).

(continued)

Table 2-1. ASN Boot Options *(continued)*

Boot Option	Description
Netboot	The network supplies the ASN's configuration file. The software image can come from either the ASN's local file system or from the network. Netboot requires a console or modem connection to the router. With Netboot, the ASN relies on a server on the network to determine the location and name of its configuration file and software image (if you do not use the local software image).
Directed Netboot	The network supplies the ASN's software image and configuration file. Directed Netboot requires a console or modem connection to the router. With Directed Netboot, you or your network administrator must configure the router to specify the path name of the software image and configuration file. In other words, Directed Netboot does not rely on a network server for the location and name of the software image and configuration file.
Local Boot	The ASN boots using the software image and configuration file that reside in the router's local file system. A router software image is a group of executable files that operates the protocols on your network in conjunction with the router. Local booting is generally quicker than network booting (EZ-Install, Netboot, and Directed Netboot) and minimizes line traffic, since the router does not need to get its files from the network.



Note: The *asn.exe* file must be on the ASN's local file system for any network boot procedure. The *asn.exe* file is the ASN's software image.

Starting the ASN for the First Time

The first time you turn on an ASN, the router attempts to boot using EZ-Install. EZ-Install boots over a synchronous interface only. If your ASN does not have a Dual Sync net module, your network administrator can configure your ASN to netboot over Ethernet.

After successfully completing EZ-Install, the ASN is connected to the Site Manager workstation over the network. Your network administrator can then manage the ASN remotely, and, if desired, configure the router to use Netboot, Directed Netboot, or Local Boot for subsequent boot procedures.

If your network administrator has not configured the network for EZ-Install, the procedure fails, and the ASN automatically uses the Local Boot procedure. (The Local Boot procedure requires that you have installed a Flash memory card with a valid boot image and configuration file.) In this case, you must run the Quick-Start procedure to create a startup configuration. For information on how to create a startup configuration, refer to “Using Local Boot (the Quick-Start Procedure),” later in this chapter.

The following sections describe how to use each of the different boot options for the ASN.

Using EZ-Install

Ask your network administrator to verify that the network is set up so that you can use the EZ-Install procedure.



Note: If you have a stacked configuration that uses SPEX net modules, be sure to read Chapter 3 for the proper procedure for powering on the nodes in the stack before you turn on the ASN.

To use EZ-Install:

1. **Install the Flash memory card as described in Chapter 1.**
2. **Press the power switch on the ASN back panel to the ON (1) position. If you are using the optional redundant power supply unit (RPSU) with your ASN, power on that unit as described in *Installing and Maintaining the HRPSU*.**

The ASN comes on and activates EZ-Install.



Note: If you turn on the ASN before the network administrator is ready, restart the ASN by pressing the reset button on the front panel. Refer to Chapter 3 for more information on resetting the ASN.

When the ASN boots, its LEDs flash in a particular order. Refer to Chapter 3 for information on checking the LEDs on the ASN front panel to make sure the router is operating properly.

Using Netboot

You must have at least one synchronous or Ethernet interface to use the Netboot procedure. Ask your network administrator to verify that the network is set up so that you can use the Netboot procedure. Also, ask your network administrator for the interface configuration command (**ifconfig**) to use in Step 5.

The **ifconfig** command configures the parameters necessary to load the software image and configuration files from a remote server over the network. Write the command in [Figure 2-1](#) for your reference.

Figure 2-1. Your ifconfig Command

ifconfig

You need to use either the Bay Networks Technician Interface or Site Manager to use Netboot. BayStream software does not support Netboot. This guide assumes that you are at the ASN site and are using the Technician Interface. To manage the ASN from a remote site (using either the Technician Interface or Site Manager), refer to *Connecting ASN Routers and BNX Platforms to a Network*.



Note: Before you turn on the ASN, if you have a stacked configuration that uses SPEX net modules, be sure to read Chapter 3 for the proper procedure for turning on the nodes in the stack.

To use Netboot:

1. **Ensure that the console is turned on.**
2. **Install the Flash memory card as described in Chapter 1.**
3. **Press the power switch on the ASN back panel to the ON (1) position.**
The ASN comes on and begins its diagnostic tests.
4. **Establish a Technician Interface session between the router and your ASCII terminal. To do this, at the Login prompt enter**
Manager

The Technician Interface screen should display the \$ prompt.

5. **Enter the appropriate `ifconfig` command (refer to Figure 2-1) to configure the ASN's interface to the network.**

The following is a sample command:

```
ifconfig -s1 com21 9.0.0.2 255.0.0.0 9.0.0.1
```

Refer to Appendix B for more information about the **ifconfig** command.

6. **Enter the following command to verify the configuration you specified in Step 5:**

```
getcfg
```

The **getcfg** command displays the location of the boot image and the network configuration file, as well as the interface configuration you specified using the **ifconfig** command.

Verify the interface configuration, as shown in [Figure 2-2](#).

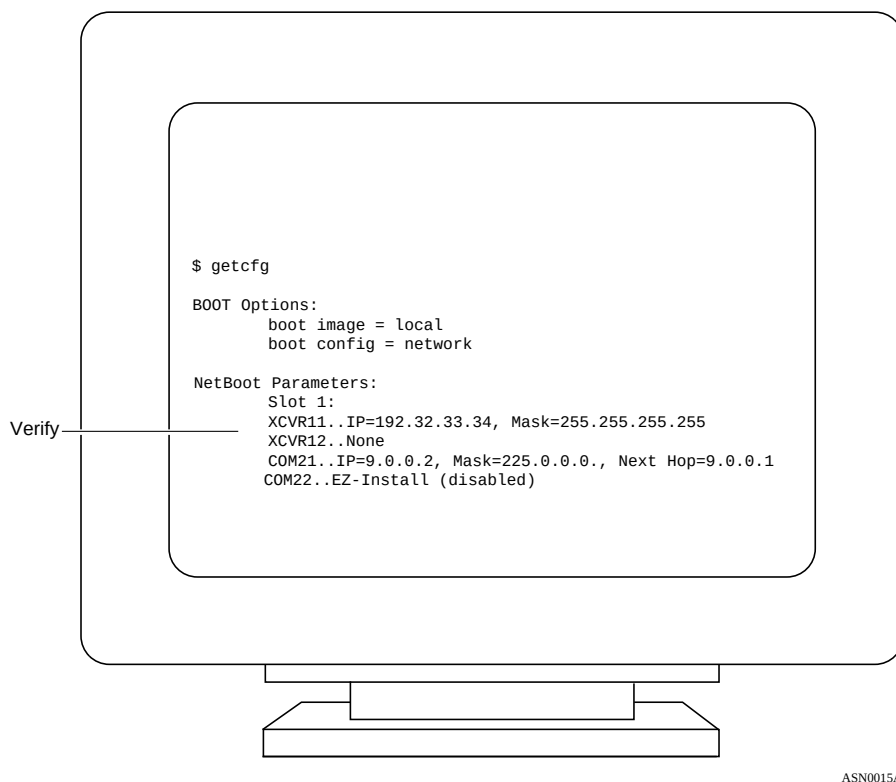


Figure 2-2. Verifying the Interface Configuration



Note: The location of the image and configuration files is specified as either Local or Network. Local means the *asn.exe* or *config* file is stored on the ASN's local file system. Network means the *asn.exe* or *config* file is stored on a server located on the network. By default, the system uses
boot image=local
boot config=network

If **getcfg** displays the correct information, continue to Step 7. Otherwise, return to Step 5 and reenter the correct **ifconfig** command. Contact your network administrator if you need assistance.

7. Enter the following command to boot the ASN:

boot

Your console displays messages indicating the progress of the Netboot procedure.

When you boot the ASN, its LEDs flash in a particular order. Refer to Chapter 3 for information on checking the LEDs on the ASN front panel to make sure the router is operating properly.

Using Directed Netboot

Ask your network administrator to verify that the network is set up so that you can use the Directed Netboot procedure. Also, ask your network administrator for the boot configuration commands (**bconfig**) to use in Step 6.

The **bconfig** commands let you specify where the router obtains its image and configuration files. Write the commands in [Figure 2-3](#) for your reference.

Figure 2-3. Your bconfig Commands

bconfig image

bconfig config

You need to use either the Bay Networks Technician Interface or Site Manager to use Directed Netboot. This guide assumes that you are at the ASN site and are using the Technician Interface.

To manage the ASN from a remote site (using either the Technician Interface or Site Manager), refer to *Connecting ASN Routers and BNX Platforms to a Network*.

Before you can use the Directed Netboot procedure, you must have already used the **ifconfig** command (as described in the previous section) to configure the interface from which you plan to use Directed Netboot. In the case of a synchronous interface, you might also need a next-hop address if there is another router between the host server and the ASN. Refer to Appendix B for more information about the **ifconfig** command.

Also, we recommend that you configure the interfaces for Directed Netboot on one slot only. If you configure multiple interfaces over multiple slots, the Directed Netboot procedure could have unpredictable results.



Note: If you have a stacked configuration that uses SPEX net modules, before you turn on the ASN, be sure to read Chapter 3 for the proper procedure for turning on the nodes in the stack.

To use Directed Netboot:

1. **Ensure that the console is turned on.**
2. **Install the Flash memory card as described in Chapter 1.**
3. **Press the power switch on the ASN back panel to the ON (1) position.**

The ASN comes on and begins its diagnostic tests.

4. **Establish a Technician Interface session between the router and your ASCII terminal. To do this, at the Login prompt, enter Manager**

The Technician Interface screen should display the \$ prompt.

5. **Enter the appropriate bconfig commands.**

You must enter one **bconfig** command to specify the location of the software image, and another to specify the location of the configuration file. Refer to [Figure 2-3](#) where you wrote your **bconfig** commands.

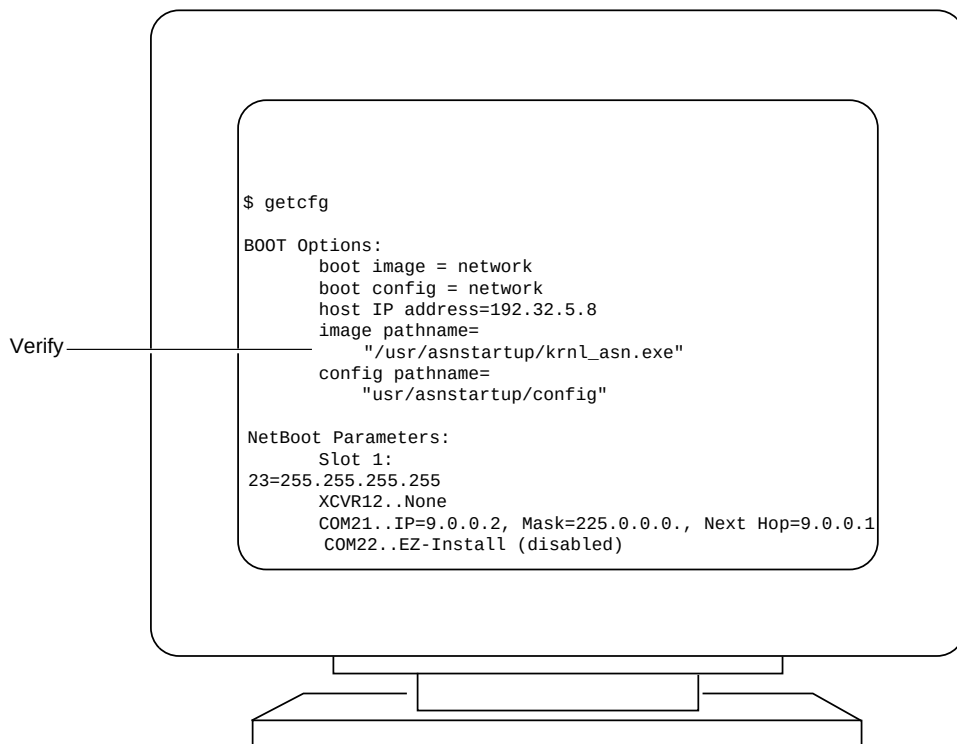
The following are sample commands:

```
bconfig image network 192.32.5.8 /usr/asnstartup/krln_asn.exe  
bconfig config network 192.32.5.8 /usr/asnstartup/config
```

Refer to Appendix B for more information about the **bconfig** command.

6. Enter the following command to verify the configuration you specified in Step 5 ([Figure 2-4](#)):

getcfg



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Figure 2-4. Verifying Directed Netboot Parameters

The Boot Options section displays the following information:

- The IP address of the server where the software image and configuration file reside
- The path name of the software image and configuration file

If **getcfg** displays the correct information, go to Step 7. Otherwise, return to Step 5 and reenter the correct **bconfig** command. Contact your network administrator if you need assistance.

7. **Enter the following command to boot the ASN:**

boot

When you boot the ASN, its LEDs flash in a particular order. Refer to Chapter 3 for information on checking the LEDs on the ASN front panel to make sure the router is operating properly.

Using Local Boot (the Quick-Start Procedure)

Ask your network administrator to verify that the network is set up so that you can use the Local Boot procedure. Also, before starting this procedure, ask your network administrator for assistance in completing the Quick-Start worksheets in Appendix C.

You need to use the Bay Networks Technician Interface to local-boot the ASN.



Note: If you have a stacked configuration that uses SPEX net modules, before you turn on the ASN, be sure to read Chapter 3 for the proper procedure for turning on the nodes in the stack.

To use the Local Boot procedure:

1. **Ensure that the console is turned on.**
2. **Install the Flash memory card as described in Chapter 1.**
3. **Press the power switch on the ASN back panel to the ON (1) position.**
4. **Establish a Technician Interface session between the router and your ASCII terminal. To do this, at the Login prompt, enter**

Manager

The Technician Interface screen should display the \$ prompt.

5. **Enter the following command to configure the ASN to use its local *config* file:**

bconfig config local



Note: The ASN ships with its configuration set to Network and its image set to Local. The **bconfig** command enables you to change this configuration.

6. Enter the following command to boot the ASN:**boot**

When you boot the ASN, its LEDs flash in a particular order. Refer to Chapter 3 for information on checking the LEDs on the ASN front panel to make sure the router is operating properly. Then go to Step 7.

7. Log in to the Technician Interface again (as described in Step 4). When the Technician Interface prompt appears, enter the following command to mount the ASN's local file system:**cd <slot>:**

slot is the slot ID of the ASN. (If the ASN is in a stack, enter the slot ID of the ASN that contains the Flash memory card.)

If you want to check the contents of the ASN's local file system, enter the following command:

dir <slot>:

The ASN *asn.exe* file and *config* file appear among the files listed.

8. Enter the following command to begin the Quick-Start procedure:**run install.bat**

Using your completed Quick-Start worksheets from Appendix C, enter the appropriate network information as the console prompts you. The ASN uses this information to configure its interface to the network.

Refer to Appendix C for sample Quick-Start screen output and for information on using Quick-Start commands.

After the ASN tests the configuration, your screen displays a message saying that the Quick-Start installation is complete. Then the ASN dynamically starts using the configuration information you entered.

9. When the Technician Interface prompt reappears, enter the following command to exit the Technician Interface:**logout**

Contact your network administrator to verify that the ASN is now connected to the network. Your network administrator can refer to *Connecting ASN Routers and BNX Platforms to a Network* to troubleshoot any problems.

Contact your local Bay Networks Technical Response Center if you need additional assistance.

Chapter 3

Operating the ASN

This chapter describes how to

- Turn an ASN on and off
- Reset an ASN
- Check the status of the ASN through its front-panel and net module LEDs
- Remove the Flash memory card
- Protect the files on the Flash memory or SRAM card
- Change physical stack configurations

Turning the ASN On and Off

Before turning on the ASN, refer to Chapter 2 to determine how you want to start the ASN on the network. Also, to boot the ASN, you must install a Flash memory card with a valid boot image and configuration file. Refer to Chapter 1 for information on installing a Flash memory card

1. **Press the power switch to the ON (1) position** [\(Figure 2\)](#).



Note: If the ASN does not turn on, check the polarity of the connections to the power source. If polarity has been reversed, the router will not turn on. If the polarity is correct and the ASN does turn on, contact the Bay Networks Technical Response Center.

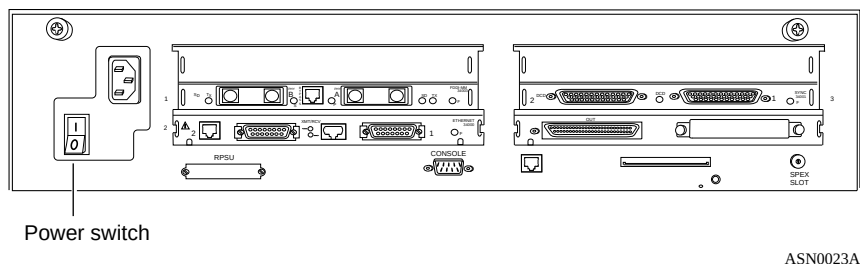


Figure 3-1. Power Switch



Caution: If your stack uses SPEX net modules, you can turn on the nodes in a stack in any order; however, you must turn on all nodes within 30 seconds. If you are unable to do so, the nodes you turned on will fail. If this occurs, turn off all nodes in the stack, and then turn them on again.

Also, if your stack uses SPEX net modules, turning off any node in the stack brings the entire stack down. The other nodes in the stack remain on, however, until you turn them off. Be sure to turn off all nodes in the stack.

2. Verify that air is flowing by placing your hand next to the fan vents.



Note: If you cannot feel air flow from the vents, and the Power and Diag LEDs do not light or the Diag LED does not turn off, turn the power switch to the OFF (0) position. Wait 1 minute and then turn the power switch to the ON (1) position. If the problem persists, contact the Bay Networks Technical Response Center.

To turn off an ASN, press the power switch to the OFF (0) position.

If your stack uses SPEX-HS net modules, you can turn on any of the nodes that you want to activate in the stack. For example, you might want to start Nodes 2, 3, and 4. In this case, only Node 1 (the node that you do not power on) will not operate.

Similarly, you can turn off any node in the stack without affecting the operation of the other nodes. Make sure that the Flash memory card -- containing the boot image and configuration file -- is installed in a node that is turned on and cabled to the stack.

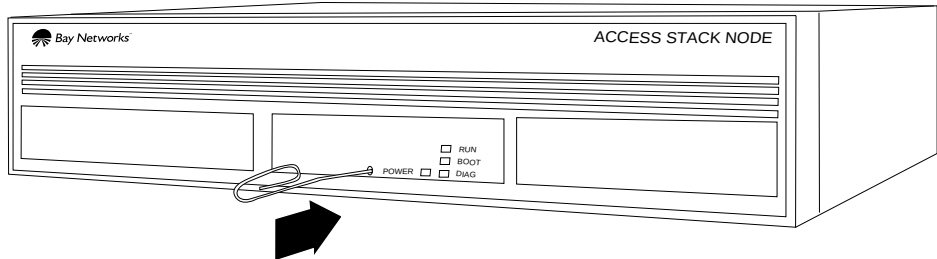
Resetting the ASN

You can press the Reset button on the ASN to warm-start the router. Pressing Reset is the same as using the **reset** command for a specific slot from Site Manager or the Bay Networks Technician Interface.

To reset an ASN, insert the end of a paper clip into the small opening shown in [Figure 3-2](#).

For more information about resetting the ASN, refer to

- *Managing Routers and BNX Platforms* (if you are using Site Manager to reset a router)
- *Using Technician Interface Software* (if you are using the Technician Interface to reset a router)
- *Administration Guide* (if you are resetting a BayStream platform)



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Figure 3-2. **Resetting the ASN**



Caution: If you press the Reset button on an ASN in a stack, only that unit resets. Be sure to press Reset on each unit in the stack if you intend to reset the entire stack. You can also use the **reset** command (without arguments) to reset the stack.

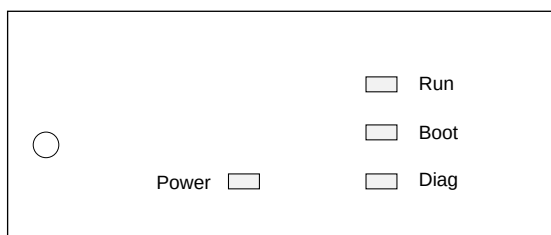
Checking Status Indicators

This section describes how to check the status of the router using the ASN LEDs. You can use the information in this chapter to determine whether the ASN is functioning properly.

For information on how to check the status of the router using the net module LEDs, refer to the installation manual shipped with your net module.

ASN LEDs

[Figure 3-3](#) shows the LEDs on the ASN front panel.



ASN0018A

Figure 3-3. ASN Front-Panel LEDs

The Local Power LED lights when the ASN power is on and the system board is receiving power. The Remote Power LED lights when the high-power redundant power supply unit (HRPSU) is on and the system board is receiving power from that unit.

[Table 3-1](#) describes how the Run, Boot, and Diag LEDs indicate the ASN status.

Table 3-1. ASN Status Indicators

Status	Run	Boot	Diag
Initial power on	On	On	On
Diagnostics running	Flashes 1 second on, 1 second off	Off	Off
Bootting	Off	On	Off*
Normal operation	On	Off	Off*
Diagnostic failure (Testing detected at least one error)†	Flashes 1 second on, 1 second off	Off	On
SPEX Failure	Flashes 1 second on, 1 second off	Off	Flashes 1 second on, and alternates flashes with Run LED flashes

*If the router boots and the Diag LED is on, one or more of the connectors failed a diagnostic test. The router's operating system reports the failing connectors to the event log and brings up the interfaces on only those connectors that pass the diagnostic test. See Appendix A for more information on checking LEDs for failures.

†If a connector test fails, the router will still boot.

The normal sequence of the front-panel LEDs when you turn on an ASN is

1. Initial power on
2. Diagnostics running
3. Bootting
4. Normal operation

If a diagnostic failure occurs, contact your local Bay Networks Technical Response Center.

If a SPEX failure occurs, refer to Appendix A for troubleshooting suggestions.

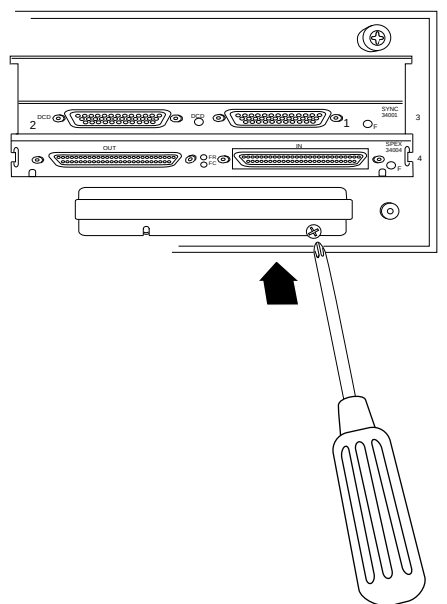
Removing the Flash Memory Card

BayStream software requires the presence of at least one PCMCIA SRAM card to collect billing and performance data. Use the procedures described in this section to remove PCMCIA SRAM cards.

To remove the Flash memory or SRAM card:

1. **Remove the panel covering the memory card receptacle at the back of the ASN ([Figure 3-4](#)).**

To remove the panel, loosen the two screws on the panel. Then slide the panel up to remove it from the ASN.



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Figure 3-4. Accessing the Flash Memory Card Receptacle

2. **Press the Eject button adjacent to the card receptacle ([Figure 3-5](#)) and gently pull the card out of the receptacle.**

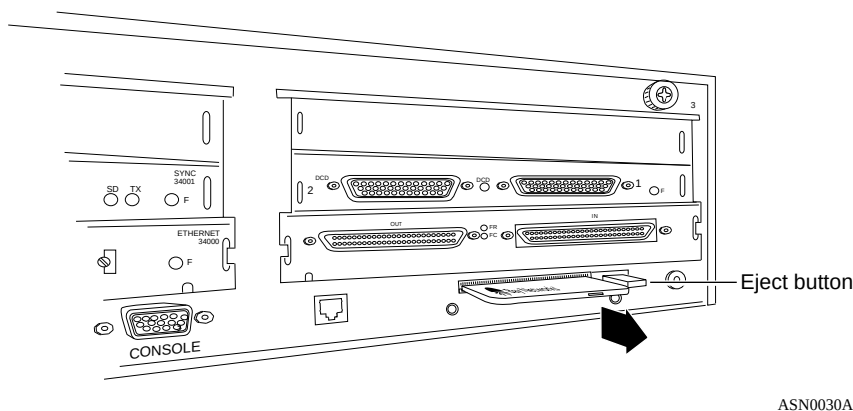


Figure 3-5. Removing the Flash Memory Card from the Receptacle

3. To insert another card into the receptacle, refer to “Installing the Flash Memory Card” in Chapter 1.



Note: If you install a new Flash memory or SRAM card that you did not obtain from Bay Networks, you must format the card before trying to write to it. You can format the card using Site Manager or the Technician Interface **format** command. (Refer to *Using Technician Interface Software* for instructions.)

4. If you do not want to insert a card into the receptacle, replace the cover panel and tighten the two screws.

Protecting the Files on the Flash Memory or SRAM Card

Bay Networks ships each memory card with its read-write protect switch in the unprotected position ([Figure 3-6](#)).

After successfully loading the configuration file and saving your configuration, you may want to write-protect the memory card for backup purposes.



Note: You typically do not operate a router with a write-protected memory card. We recommend making a copy of your configuration on another memory card, write-protecting the card, and storing it in a safe place.

To change memory card protection:

1. **Remove the memory card.**



Caution: You must remove the card from the router before changing the read-write protection. Failure to remove the card may result in improper write protection.

2. **Adjust the read-write protect switch, which is located on the edge opposite the INSERT arrow of the memory card ([Figure 3-6](#)).**

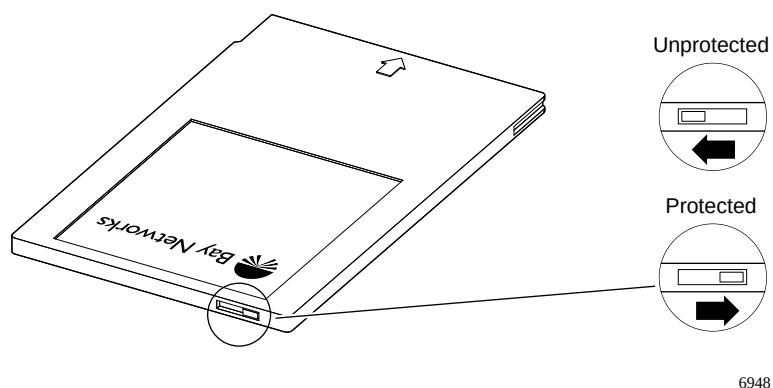


Figure 3-6. Flash Memory Card Read-Write Protect Switch

3. **Reinstall the memory card.**

Changing Physical Stack Configurations

If you operate your ASNs in a stacked configuration, at some point you might need to add or remove a node in the stack. The steps you follow to add or remove a node depend on whether you are using SPEX or SPEX-HS net modules.

The following sections describe the procedures for each of the two net modules. Refer only to the procedure for the type of net module that you use in your ASN stack.

Adding a Node to a Stack with SPEX Net Modules

If you are adding a node that has a Flash memory card, and there is already at least one Flash memory card in the stack, the cards must have identical default boot images and default configuration files. If this is not the case, remove the Flash memory cards that do not have the correct image, or update the cards so that they all have the same image.

To add a node to an existing stack:

1. **Turn off all ASNs in the stack, as described earlier in this chapter.**
2. **Place the new node at the top of the stack.**
3. **Move the SPEX terminator plug from the node below the one you are adding to the SPEX OUT port on the new node.**
4. **Insert one end of the SPEX cable into the SPEX OUT port on the ASN below the one you are adding. Insert the other end of the SPEX cable into the SPEX IN port on the node you are adding.**
5. **Assign the new node a unique slot ID.**

Refer to Chapter 1 for information on setting the slot ID.

Usually, the slot ID should be the next consecutive value in the stack. For example, if the node below the one you are adding has a slot ID of 2, set the slot ID of the new node to 3.

6. **Turn on all nodes in the stack, as described earlier in this chapter.**

Removing a Node from a Stack with SPEX Net Modules

To remove a node from a stack (for example, if the node needs repairs or if you want fewer nodes in the stack):

1. **Turn off all nodes in the stack, as described earlier in this chapter.**
2. **Remove the SPEX cable (and terminator, if there is one) from the SPEX net module on the node you want to remove.**
3. **If you want to physically remove the node from the stack, be sure to remove the network and power cables from the back of the node.**



Note: If you remove a node that is between two other nodes in an electronic enclosure rack, you may need to reposition the remaining nodes in order to reconnect them with a SPEX cable, due to the length of the cable.

4. **Reconnect the remaining nodes in the stack using the SPEX cable and terminator.**

For information on cabling the net module, refer to the installation manual shipped with the net module.

If you remove a node from a stack containing only two nodes, be sure to insert a SPEX terminator plug (Order No. 70001) in both ports of the SPEX net module in the node that remains.

5. **Make sure that the Flash memory card (with a valid boot image and configuration file) is installed in one of the remaining nodes.**
6. **Turn on all remaining nodes in the stack, as described earlier in this chapter.**



Note: Do not change the slot IDs on the remaining nodes in the stack. The slot IDs do not have to be contiguous. If you renumber the slot IDs, your configuration file will not match the new configuration.

Adding a Node to a Stack with SPEX-HS Net Modules

If you are adding a node that has a Flash memory card, and there is already at least one Flash memory card in the stack, the cards must have identical default boot images and default configuration files. If this is not the case, remove the Flash memory cards that do not have the correct image, or update the cards so they all have the same image.

To add a node to an existing stack, follow the steps in this section. When you add a node to a stack using SPEX-HS net modules, you do not need to turn off the other nodes in the stack.

1. **Place the new node at the top of the stack.**
2. **Insert the connector on the SPEX-HS cable into the SPEX-HS Port A. Tighten the thumbscrews.**

If you are connecting nodes that use a single SPEX-HS cable, go to Step 4. If you are connecting nodes that use dual SPEX-HS cables, go to Step 3.

3. **Insert the connector on the second SPEX-HS cable into the SPEX-HS Port C. Tighten the thumbscrews.**

For information on connecting nodes with dual SPEX-HS cables refer to the installation manual shipped with the net module.

4. **Assign the new node a unique slot ID.**

Refer to Chapter 1 for information on setting the slot ID.

Usually, the slot ID should be the next consecutive value in the stack. For example, if the node below the one you are adding has a slot ID of 2, set the slot ID of the new node to 3.

5. **Turn on the node you added to the stack, as described earlier in this chapter.**



Note: Do not turn on the node before you attach the SPEX-HS cable. When you turn on an ASN, it runs diagnostics (including SPEX diagnostics). If the SPEX-HS cable is not installed when SPEX diagnostics run, the node will fail the diagnostics. If this occurs, you must turn off the node, install the SPEX-HS cable, and then turn on the node again.

Removing a Node from a Stack with SPEX-HS Net Modules

To remove a node from a stack (for example, if the node needs repairs or if you want fewer nodes in the stack):

1. **Turn off the node you want to remove from the stack.**
2. **Remove the SPEX-HS cables from the SPEX-HS net module on the node you are removing.**

The other nodes in the stack remain operational.

3. **If you want to physically remove the node from the stack, be sure to remove the network and power cables from the back of the node.**



Note: Do not change the slot IDs on the remaining nodes in the stack. The slot IDs do not have to be contiguous. If you renumber the slot IDs, your configuration file will not match the new configuration.

4. **Make sure the Flash memory card (with a valid boot image and configuration file) is installed in one of the remaining nodes.**

Chapter 4

Opening and Closing the ASN

This chapter describes how to

- Remove the component tray
- Replace the component tray
- Attach the antistatic wrist strap

You must remove the component tray to replace

- Memory modules
- Net modules
- System board

Chapters 5 and 6 describe how to replace these components.



Danger: Due to high energy hazards, only qualified service personnel are permitted to install or replace components in an ASN.

You do not need to remove the tray to replace the Flash memory card or SRAM card.

Removing the Component Tray

To remove the component tray:

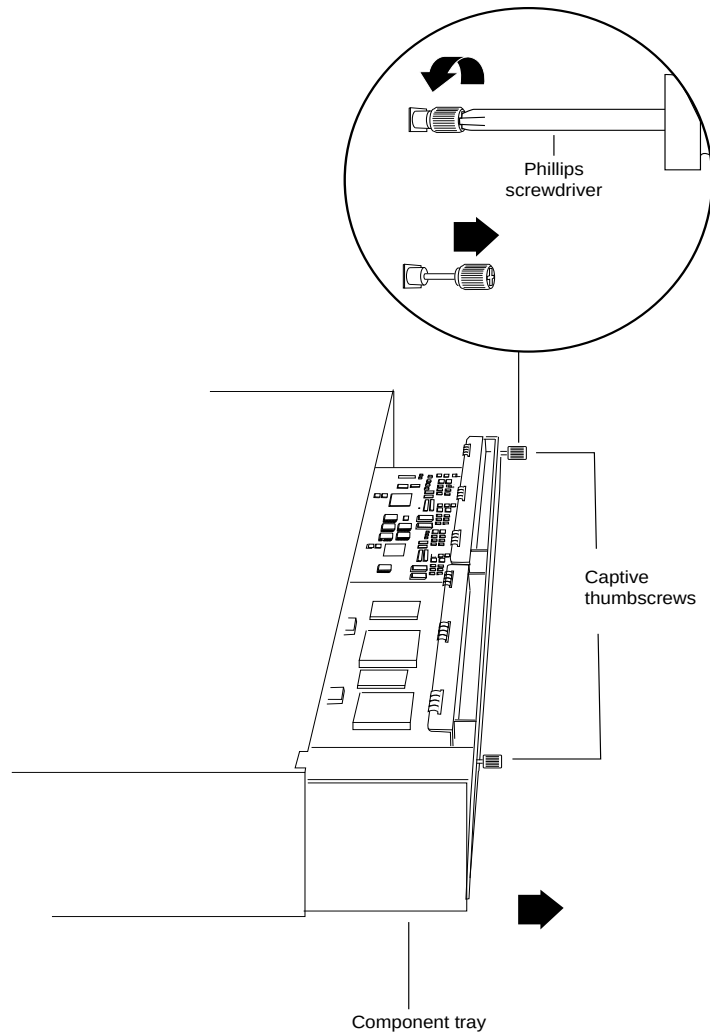
1. **Turn off the ASN.**
2. **Detach all cables from the ASN back panel.**
3. **Using a Phillips screwdriver, loosen the two captive screws that fasten the tray to the chassis (Figure 4-1).**
4. **Pull the two captive screws and gently slide the tray out of the chassis a few inches ([Figure 4-1](#)).**

Hold the sides and bottom of the tray to support it as you slide it out. Try to keep the tray level as you slide it out.

5. **Place the tray on a sturdy work surface.**



Caution: Do not touch any components or boards in the ASN until you have attached an antistatic wrist strap. Refer to the section “Attaching the Antistatic Wrist Strap,” later in this chapter.



ASN0031A

Figure 4-1. Removing the Component Tray

The net module ports are exposed at the back end of the component tray. To perform maintenance tasks on the ASN components, face the back end of the tray.

Replacing the Component Tray

To replace the component tray:

1. **Gently slide the tray into the chassis.**
2. **Use a Phillips screwdriver to tighten the two captive screws that fasten the tray to the chassis (refer to [Figure 4-1](#)).**
3. **Reattach the cables to the proper connectors on the back panel.**
4. **Turn on the ASN.**

Attaching the Antistatic Wrist Strap

Your ASN comes with an antistatic wrist strap. The antistatic wrist strap directs the discharge of static electricity from your body to the chassis of the router, thereby avoiding discharge to sensitive electronic components.

You must wear an antistatic wrist strap whenever you remove, install, or handle the following user-serviceable components:

- Single inline memory modules (Refer to Chapter 5 for information on replacing SIMMs.)
- Net modules (For information on replacing net modules, refer to the installation manual that shipped with the net module.)
- System board (Refer to Chapter 6 for information on replacing the system board.)

The procedures described in Chapters 5 and 6 can be safely performed by an experienced network operator with a technical understanding of electronic apparatus and data communications.



Caution: Electrostatic discharge can damage hardware. Follow the procedure in this section to protect your equipment from damage.

To attach the antistatic wrist strap:

- 1. Remove the component tray.**
- 2. Remove the strap, alligator clip, and cable from the package.**
- 3. Attach (snap) the snap end of the cable to the wrist strap.**
- 4. Place the strap around your wrist. Adjust the strap to ensure that the metal buckle inside the strap touches your skin.**
- 5. Plug the jack at the other end of the cable into the opening on the alligator clip.**
- 6. Attach the alligator clip to any unpainted metal surface on the component tray.**

Chapter 5

Removing and Installing Memory Modules

This chapter describes how to

- Remove DRAM SIMMs
- Install DRAM SIMMs
- Remove the Tag SIMM
- Install the Tag SIMM
- Remove the Fast Packet Cache SIMM
- Install the Fast Packet Cache SIMM



Danger: Due to high-energy hazards, only qualified service personnel are permitted to install or replace components in an ASN.

Reviewing the ASN SIMM Types

The ASN uses SIMMs to provide

- Dynamic random access memory (DRAM).
- Tag memory, which adds a protection tag to individual memory locations. For example, a memory location might be tagged with write protection.
- A Fast Packet Cache, which enhances performance. The Fast Packet Cache is optional and is most useful in midrange and higher-end configurations (such as multiple LAN or FDDI configurations).

The ASN supports configurations of 8, 16, and 32 MB of DRAM. [Table 5-1](#) shows the DRAM SIMM requirements for each configuration.

Table 5-1. DRAM Requirements

Configuration	SIMM Capacity	Number of SIMMs
8 MB	1 MB by 36	2
16 MB	2 MB by 36	2
32 MB	4 MB by 36	2

The capacity of the SIMM you use for Tag memory depends on the DRAM configuration. [Table 5-2](#) shows the Tag SIMM requirements for each configuration.

Table 5-2. Tag SIMM Requirements

DRAM Configuration	Tag SIMM Capacity
8 or 16 MB	1 MB by 8
32 MB	4 MB by 8

If you upgrade the DRAM, be sure to use the appropriate Tag SIMM.

To install or remove the SIMM, remove the component tray, as described in Chapter 4. Then go to the appropriate section in this chapter.



Note: Earlier versions of the ASN use a different Fast Packet Cache SIMM. If you have an earlier ASN model, the Fast Packet Cache SIMM on your system board will look different from the one shown in the illustrations in this chapter.

Removing DRAM SIMMs

You may need to remove DRAM SIMMs if you are upgrading the ASN memory configuration. Figure 5-1 shows the location of the DRAM SIMMs.

To remove each of the DRAM SIMMs:

1. **Remove the component tray and attach the antistatic wrist strap, as described in Chapter 4.**

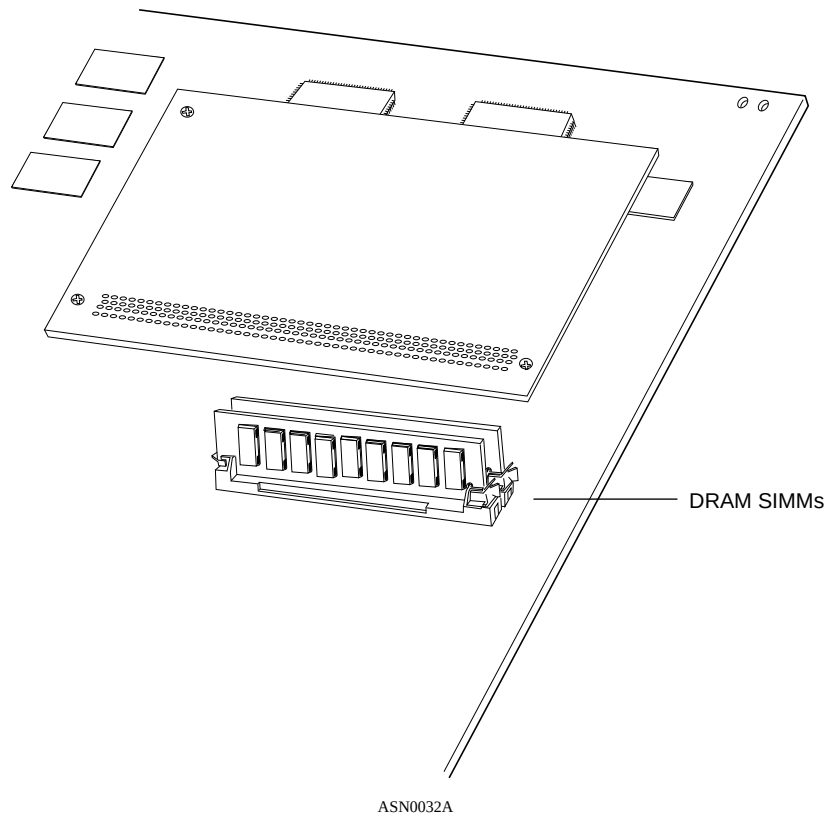
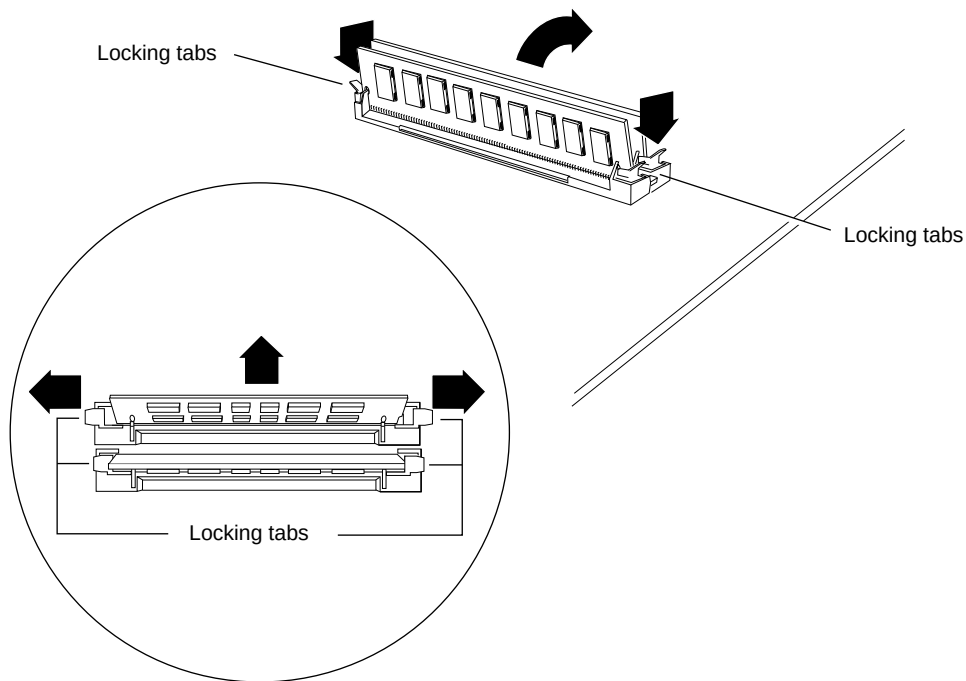


Figure 5-1. Locating the DRAM SIMMs

You must first remove the SIMM closest to the front of the tray. (Remember, the back of the tray is where the net module ports are exposed.)

2. **Press the locking tabs on each side of the SIMM and pull the SIMM outward to release the board.**

The SIMM tilts back at a slight angle toward the front of the tray ([Figure 5-2](#)).



ASN0033A

Figure 5-2. Releasing the DRAM SIMM Locking Tabs

3. **Grasp the top corners of the board and pull it up and out of the connector.**

Installing DRAM SIMMs

When you install DRAM SIMMs, make sure that the SIMMs are the same size. For example, you can install two 2-MB by 36 SIMMs for a 16-MB configuration; however, do not install one 1-MB by 36 and one 2-MB by 36 SIMM.

Also make sure that you are using the correct capacity Tag SIMM for your DRAM configuration (refer to [Table 5-2](#)).

Before you perform this procedure, be sure to attach the antistatic wrist strap, as described in Chapter 4.

You must first install the SIMM closest to the back of the tray. To install each of the DRAM SIMMs:

1. **Grasp the SIMM by the top corners, and place it into the connector at a slight angle.**

The SIMM is keyed to fit in the connector only one way. As you face the back end of the component tray, orient the SIMM so that the notch on the board is in the bottom-left corner ([Figure 5-3](#)).

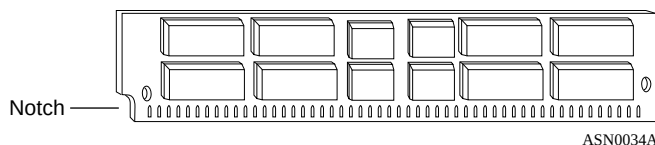
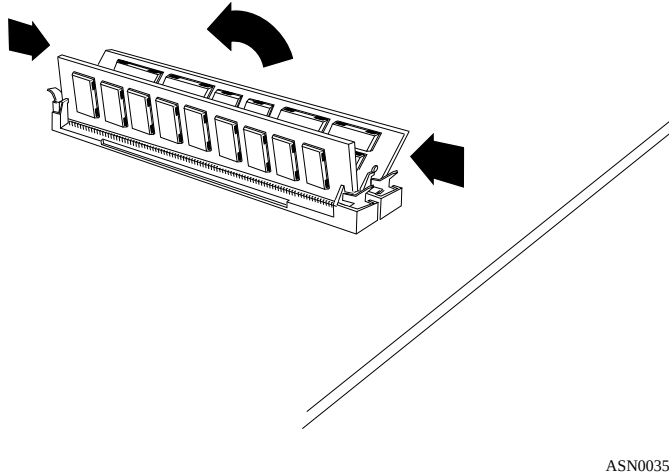


Figure 5-3. Orientation of the DRAM SIMM

2. **Pull the SIMM toward the back of the tray until the locking tabs snap into place ([Figure 5-4](#)).**



ASN0035A

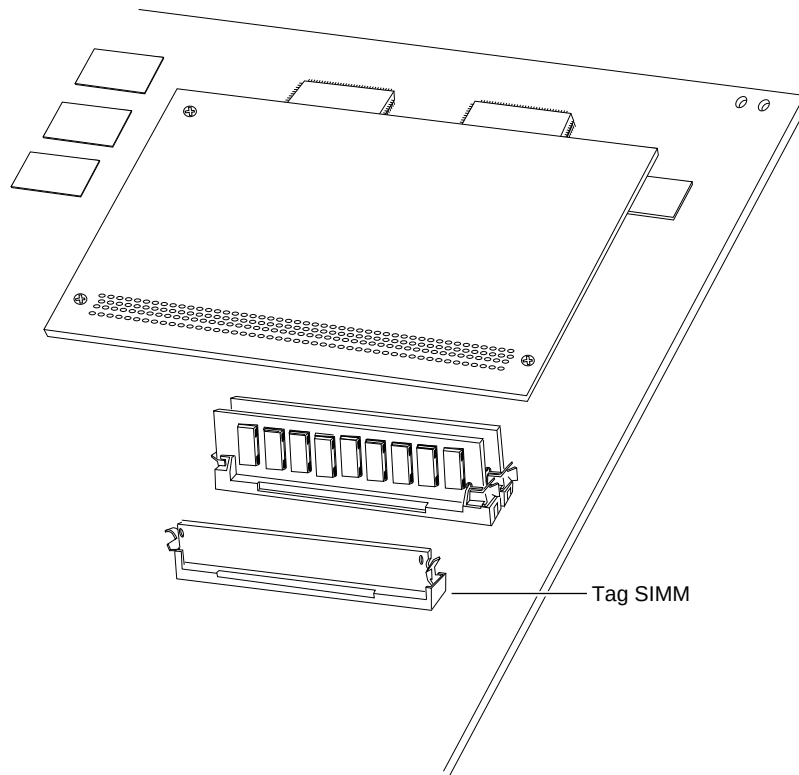
Figure 5-4. Installing the DRAM SIMM

Removing the Tag SIMM

You need to replace the Tag SIMM ([Figure 5-5](#)) if you are upgrading the ASN DRAM configuration to 32 MB. [Table 5-2](#), shown earlier, lists the Tag SIMM requirements for the different DRAM configurations.

To remove the Tag SIMM:

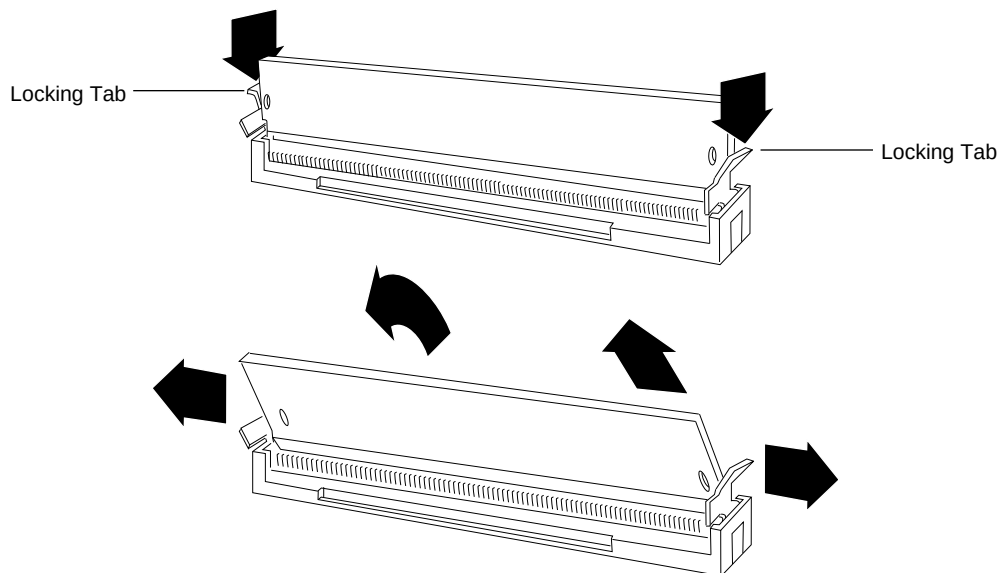
1. **Remove the component tray and attach the antistatic wrist strap, as described in Chapter 4.**



ASN0036A

Figure 5-5. Locating the Tag SIMM

2. **Press the locking tabs on both sides of the SIMM and pull the SIMM outward to release the board (Figure 5-6).**



ASN0037A

Figure 5-6. Releasing the Tag SIMM Locking Tabs

3. **Grasp the top corners of the board and gently pull it toward you at a slight angle to the system board. The SIMM naturally positions itself at an angle as you pull it.**
4. **Lift the SIMM out of the connector.**

Installing the Tag SIMM

Before you perform this procedure, be sure to attach the antistatic wrist strap, as described in Chapter 4.

To install the Tag SIMM:

1. **Grasp the SIMM by the top corners and place it into the connector at a slight angle (Figure 5-7).**

The SIMM is keyed to fit in the connector only one way. As you face the back end of the component tray, orient the SIMM so that the notch on the board is in the bottom-right corner (Figure 5-7).

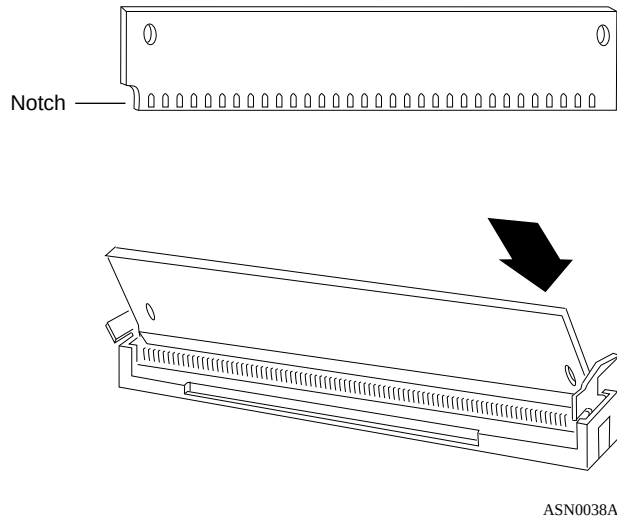


Figure 5-7. Installing the Tag SIMM

2. **Push the SIMM away from you until the locking tabs snap into place.**

Removing the Fast Packet Cache SIMM

You need a pair of needle-nose pliers to perform this procedure. To remove the Fast Packet Cache SIMM:

1. **Remove the component tray and attach the antistatic wrist strap, as described in Chapter 4.**

[Figure 5-8](#) shows the location of the Fast Packet Cache SIMM.

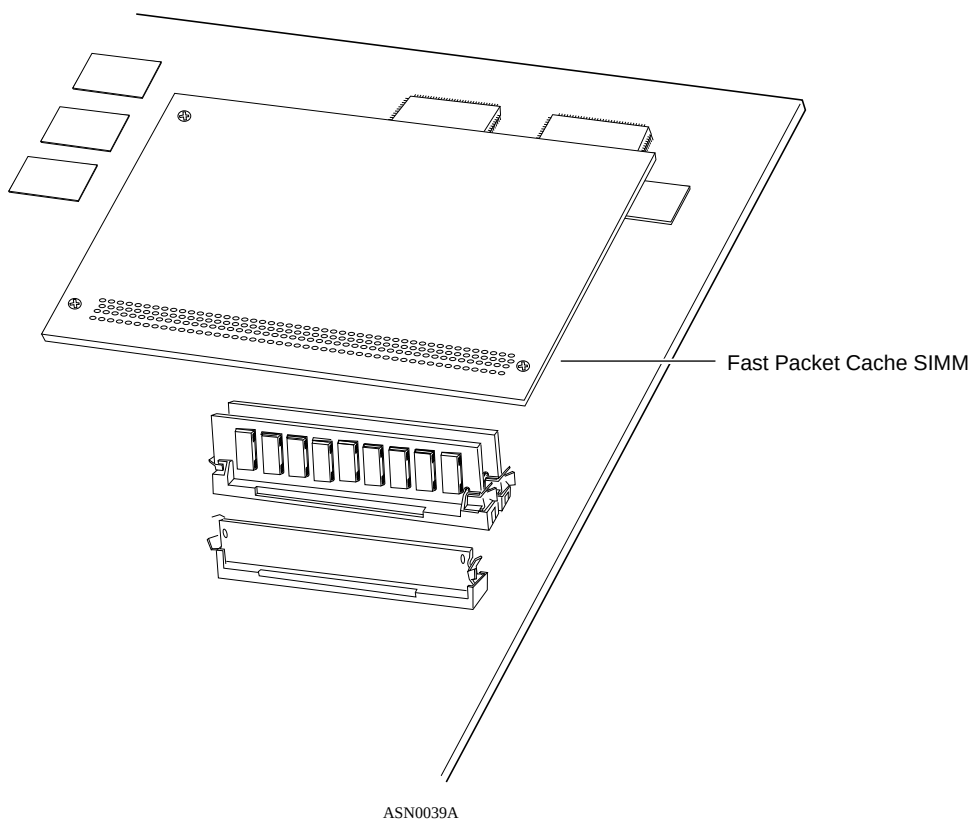


Figure 5-8. Locating the Fast Packet Cache SIMM

2. For each of the three plastic standoffs that hold the Fast Packet Cache SIMM in place:
 - a. Use your needle-nose pliers to pinch the end of the standoff.
 - b. While using the pliers to push down on the standoff, lift up on the SIMM just enough to release it from the standoff ([Figure 5-9](#)).

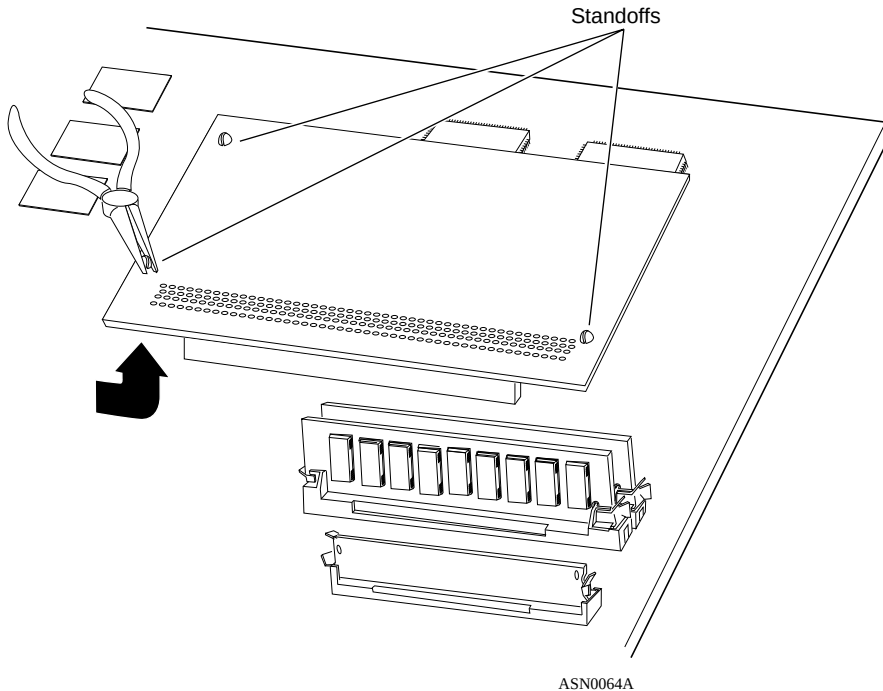


Figure 5-9. Releasing the SIMM from the Standoffs

3. Grasp the sides of the board and pull up to release it from its connector on the system board.

Installing the Fast Packet Cache SIMM

Before you perform this procedure, attach the antistatic wrist strap, as described in Chapter 4. You also need a pair of needle-nose pliers to perform this procedure.

The Fast Packet Cache SIMM ships with four preinstalled plastic standoffs.

If you are replacing the SIMM (that is, installing one in place of one you just removed), you must remove all of the preinstalled standoffs ([Figure 5-10](#)). When you removed the old SIMM, you left the three standoffs required for installing the SIMM in place (on the system board).

If you are installing a Fast Packet Cache SIMM for the first time, you must remove one of the preinstalled standoffs ([Figure 5-10](#)). This is necessary because the ASN system board can accommodate only three of the standoffs.

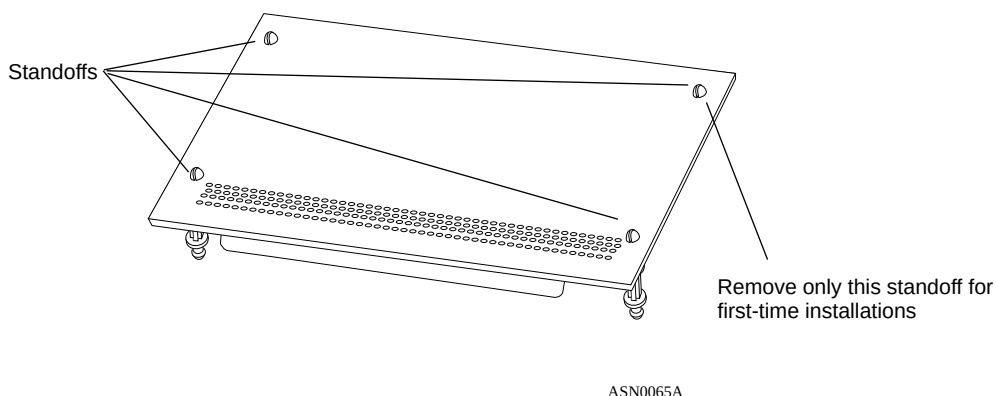


Figure 5-10. Installing the Standoffs

To remove a standoff from the Fast Packet Cache SIMM:

1. **Position the SIMM with the connector side down** (refer to [Figure 5-10](#)).
2. **Use your needle-nose pliers to pinch the end of the standoff, and then push the end through its mounting hole.**

To install the Fast Packet Cache SIMM:

1. **Align the connector on the SIMM with the connector on the system board (Figure 5-11).**

If you are installing the SIMM for the first time, align the standoffs on the SIMM with the mounting holes on the system board.

If you are replacing the SIMM, align the mounting holes on the SIMM with the plastic standoffs already installed on the system board.

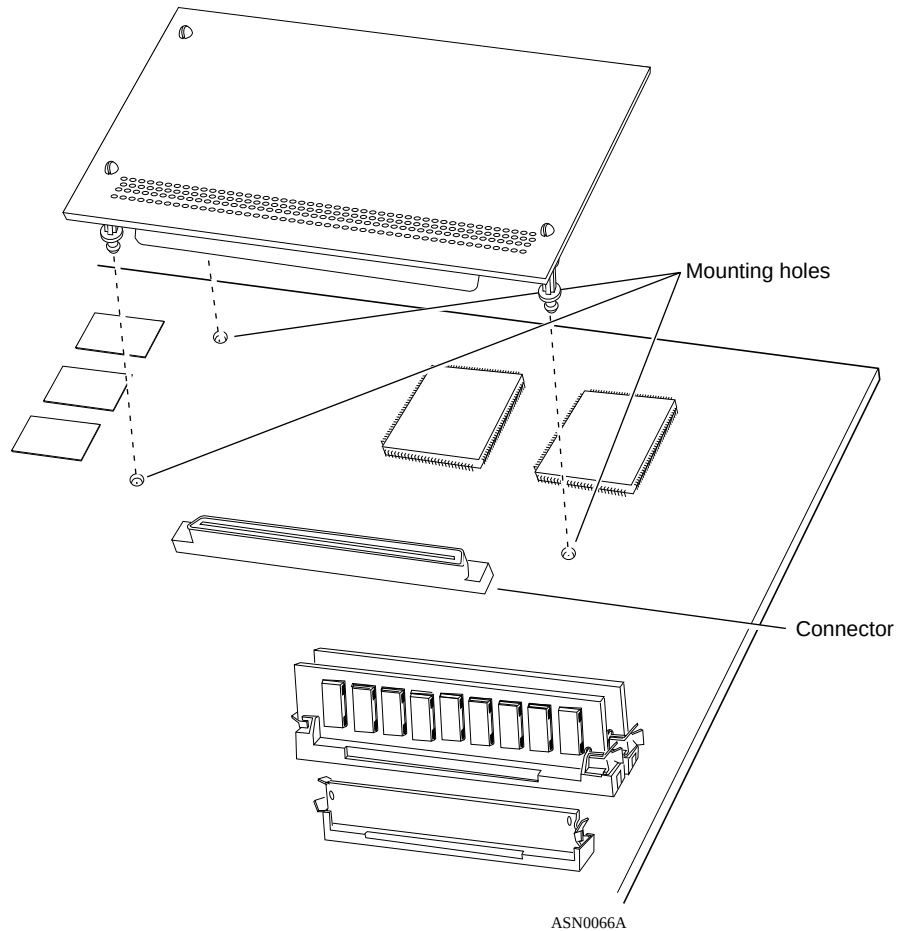


Figure 5-11. Aligning the Fast Packet Cache SIMM (Initial Installation)

2. Press the SIMM into place.

Make sure each standoff is securely fastened (it should click into place).

Chapter 6

Replacing the System Board

This chapter describes how to

- Remove the system board
- Install the system board

To remove and install the system board, you need a Phillips screwdriver and a nut driver.



Danger: Due to high-energy hazards, only qualified service personnel with written authorization from Bay Networks are permitted to install or replace components in an ASN.

Removing the System Board

To remove the system board:

1. **Remove the component tray and attach the antistatic wrist strap, as described in Chapter 4.**
2. **Remove all net modules and filler brackets. Refer to the installation manual that shipped with the net module for instructions.**
3. **Remove the DRAM, Tag, and Fast Packet Cache SIMMs from the system board. Refer to Chapter 5 for instructions.**
4. **Disconnect the four power supply connectors (P6, P7, P8, and P11) attached to the system board ([Figure 6-1](#)). To do this, pull up on the connectors.**

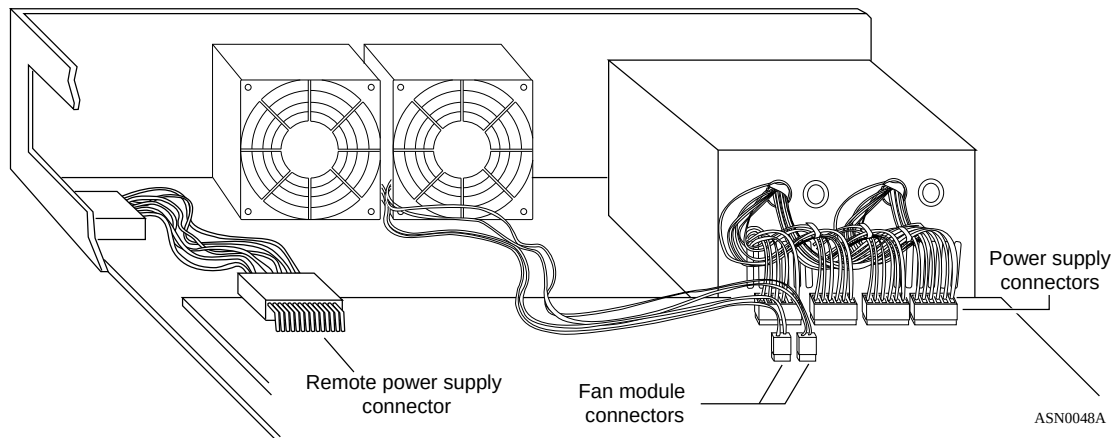


Figure 6-1. Removing Power Supply and Fan Module Connectors

5. **Disconnect the remote power supply connector (P12) on the system board ([refer to Figure 6-1](#)).** To do this, press down on the end of the locking tab closest to the cables leading into the connector and pull the connector out of its socket.
6. **Disconnect the two fan module connectors on the system board ([refer to Figure 6-1](#)).** To do this, release the connector's locking tabs and pull up on the connectors ([Figure 6-2](#)).

7. Use a nut driver to remove the two hexagonal nuts that secure the **CONSOLE** connector ([Figure 6-2](#)).

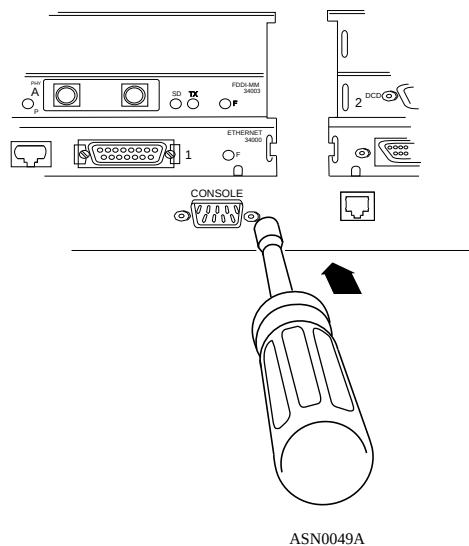


Figure 6-2. Removing the Hexagonal Nuts

8. Use a Phillips screwdriver to remove the four Phillips screws shown in [Figure 6-3](#).

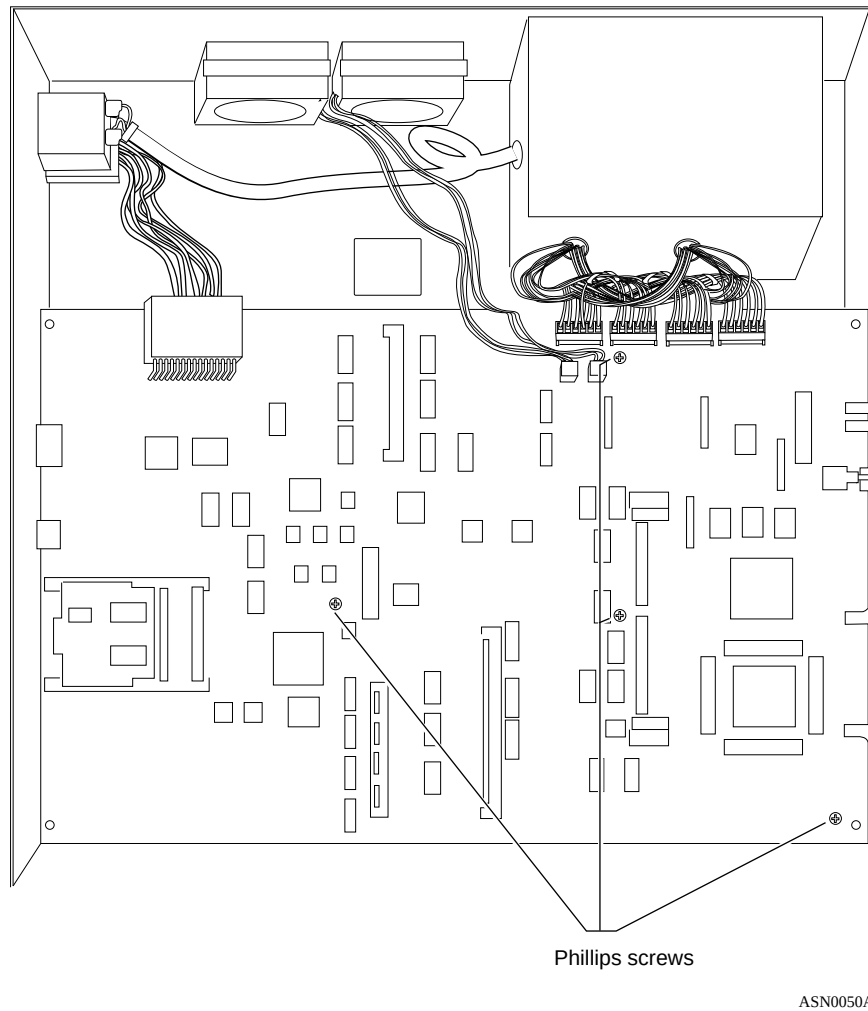


Figure 6-3. Removing the Phillips Screws

9. **Lift up each edge of the system board, except the edge at the back right of the component tray.**

The edge at the back right has a cutout ([Figure 6-4](#)) in which you can insert your finger to push up on the system board.

Push up on the edges of the system board to release the self-locking screws that secure it to the tray. You must release all 7 self-locking screws.

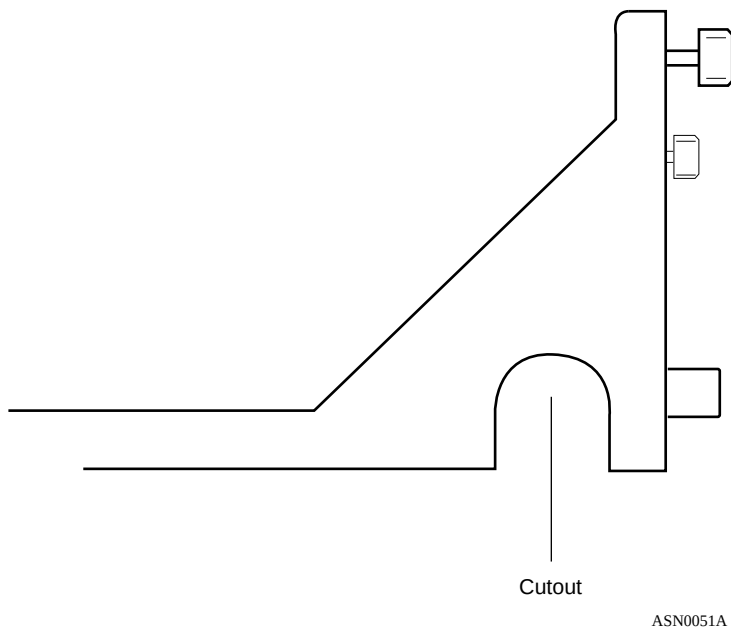


Figure 6-4. Cutout on Component Tray

10. **Slide the system board toward the front of the component tray, and then lift the board to remove it from the tray.**

Installing the System Board

To install the system board:

1. **Slide the system board into the component tray.**
Make sure that the Console port and the Flash memory card receptacle slide into their openings at the back of the component tray.
2. **Press the system board into place to secure the seven self-locking screws.**
3. **Replace the system board screws shown earlier in [Figure 6-3](#).**
4. **Install the hexagonal nuts on each side of the CONSOLE connector (refer to [Figure 6-2](#)).**
5. **Attach to the system board the connectors for the fan module, internal power supply, and remote power supply (refer to [Figure 6-1](#)).**
6. **Install the DRAM, Tag, and Fast Packet Cache SIMMs on the system board. Refer to Chapter 5 for instructions.**
7. **Replace the net modules and filler brackets. Refer to the installation manual that shipped with the net module for instructions.**
8. **Replace the component tray, as described in Chapter 4.**

Appendix A

Solving Problems

This appendix describes how to identify and remedy some of the problems you may encounter with an ASN or ASN stack.

Identifying Problems

If a problem occurs, check the LEDs on the ASN front panel and on the net modules. Also, be sure to check the LEDs before you reset or shut off the ASN.

[Table A-1](#) identifies different LED patterns and the problems they indicate depending on whether the ASN booted successfully.

Table A-1. Problems Indicated by LEDs

ASN DIAG LED	Net Module FAIL LED	Successful Boot?	Cause
On	Off	No	Central processing unit (CPU) or system hardware failure. Refer to the section “Solving Hardware Problems,” later in this chapter, for more information.
On	On	Yes	Hardware failure on net modules whose FAIL (F) LED is lit. Refer to “Solving Hardware Problems,” or check the ASN log for more information.
Off	On	Yes	Most likely a software configuration problem on net modules whose FAIL (F) LED is lit. Refer to “Solving Configuration Problems” for more information.

(continued)

Table A-1. Problems Indicated by LEDs *(continued)*

ASN DIAG LED	Net Module FAIL LED	Successful Boot?	Cause
Flashing, alternating with RUN LED	On or Off	Yes or No	SPEX or SPEX-HS cabling problem.
Off	On or Off	Yes	Flash memory card may be missing, or may not contain a valid boot image and configuration file.

The following are other indications that a problem has occurred:

- The ASN front-panel DIAG LED does not indicate a failure; however, you are unable to access the ASN from the Technician Interface (through either a console or modem connection). Refer to “Solving Technician Interface Connection Problems.”
- The DIAG LED does not indicate a failure, and you are able to access the ASN from the Technician Interface; however, the ASN is not working properly. For example, the ASN may not be handling network traffic properly, or one ASN in a stack may not be running. Refer to “Solving Configuration Problems.”

For more information on using LEDs to check the status of the ASN and net modules, refer to Chapter 3.

Solving Boot Problems

If you are unable to boot your ASN, make sure that

- The ASN (or at least one ASN in the stack) contains a Flash memory card with a valid boot image and configuration file.
- If the ASN is in a stack, each node in the stack has a unique slot ID. Refer to Chapter 1 for information on setting the slot ID.

Solving Configuration Problems

If the ASN is running, but is not working properly, verify that the router's slot ID matches the one in the configuration file. To edit a configuration file, refer to *Configuring Routers* (router software) or *Getting Started with Site Manager* (BayStream software).

If the configuration file does not have the correct slot ID, you can either

- Change the slot ID on the ASN to match the configuration file. Refer to Chapter 1 for information on how to change the slot ID.
- Change the configuration file to match the ASN slot ID. To edit a configuration file, refer to *Configuring Routers* (router software) or *Getting Started with Site Manager* (BayStream software) for information.

Once you reboot with the correct configuration, the ASN should work properly.

If the configuration file refers to the correct slot, verify that the file specifies the correct type and position for each net module in the ASN. If the net module type is incorrect in the configuration file, change the configuration file. To edit a configuration file, refer to *Configuring Routers* (router software) or *Getting Started with Site Manager* (BayStream software).

If the positions of the net modules are incorrect, you can either

- Move the net modules to match the configuration file. Refer to Chapter 6 for information on removing and installing net modules.
- Change the configuration file to match the hardware. Refer to *Configuring Routers* (router software) or *Getting Started with Site Manager* (BayStream software).

Once you reboot with the correct configuration, the ASN should work properly.

If you stacked nodes, and there is more than one Flash memory card in the stack, the cards must have identical default boot images and default configuration files. If this is not the case, either remove the Flash memory cards that do not have the correct image, or update the cards so that they all have the same image. Then reboot the ASNs.

If two or more nodes in a stack have the same slot ID, the nodes may pass diagnostics. However, errors can occur and the nodes will act unpredictably. Make sure that each ASN in the stack has a unique slot ID. Refer to Chapter 1 for information on setting the slot ID.

Solving Hardware Problems

If the LEDs on either the ASN front panel or the net modules indicate a failure, it is probably a hardware problem -- although it may be a configuration problem (refer to [Table A-1](#)). For information on how to check the status of the router using the net module LEDs, refer to the installation manual shipped with the net module.

The following sections describe how to solve both general problems and SPEX and SPEX-HS hardware problems. SPEX and SPEX-HS problems differ from other hardware problems because they may be due to improper configurations, rather than just hardware.

General Hardware Failures

If your ASN experiences a hardware failure and the ASN front panel LEDs do not indicate a SPEX problem:

1. **Make sure the ASN (or each ASN in the stack) is on. Check the ASN POWER LED. If the LED is off, check that**

- The power cord is properly connected to an AC power source. Refer to the section “Connecting to the Power Source” in Chapter 1 for more information.

2. **Verify that all SIMMs are fully inserted into their connectors on the system board.**

Refer to Chapter 5 for information about installing memory modules.

3. **Verify that all net modules are fully inserted into their connectors on the system board.**

Refer to the installation manual that shipped with the net module for information about installing net modules.

4. **Make sure that nothing is plugged into the RJ-11 port labeled DIAG on the ASN back panel (beneath the cover panel). This port is for internal use only.**

SPEX Net Module Failures

This section describes how to respond if a SPEX net module failure occurs. If you use SPEX-HS net modules, refer to the next section, “SPEX-HS Net Module Failures.”

If a SPEX failure occurs:

1. **Make sure all ASNs in the stack are on. Check the ASN Power LED. If the LED is off, check that**

- The ASN is properly connected to a power source. Refer to the section “Connecting to the Power Source” in Chapter 1 for more information.
- The power switch on the ASN back panel is in the ON position.



Note: You must turn on all ASNs in a stack within 30 seconds. If you failed to do this, turn off all nodes. Then turn on all nodes again within 30 seconds.

2. **Verify that the stack is properly cabled and terminated, and that the cables and terminators are fully inserted into the SPEX net module.**

Refer to the installation manual shipped with the net module for information about connecting stacked nodes.

3. **Make sure each ASN in the stack has a unique slot ID.**

Refer to Chapter 1 for information about setting the slot ID.

4. **Verify that the SPEX net module is installed in Position 4 in each ASN in the stack. Also make sure that the net module is properly seated in its connector on the system board.**

If the SPEX net module is not in Position 4, refer to the installation manual that shipped with the net module for instructions on how to remove the net module from its current position and install it in the correct position.

5. **Make sure no ASN in the stack is failing diagnostics other than the SPEX failure. If any ASN in the stack fails with a non-SPEX failure, do the following:**

- a. **Remove the failed ASN from the stack, and recable the remaining ASNs in the stack.**

Chapter 3 describes how to remove a node from a stack.

- b. **Make sure the Flash memory card (with a valid boot image and configuration file) is installed in one of the remaining nodes in the stack.**
- c. **Cycle the power (turn the ASN off and then on again) on any node that had a SPEX failure.**

If the remaining nodes in the stack pass powerup diagnostics and do not show a SPEX failure, then the ASN that you removed from the stack has a problem that corrupts the stack.

SPEX-HS Net Module Failures

This section describes how to respond if a SPEX-HS net module failure occurs. If you use the non-hot-swappable SPEX net modules, refer to the previous section, “SPEX Net Module Failures.”

If a SPEX-HS failure occurs, do the following:

1. **Be sure to attach the SPEX-HS cable to the connector on the SPEX-HS Net Module within 30 seconds of powering on the node.**

Refer to the installation manual that shipped with the SPEX-HS net module for information about cabling.

Preferably, you should attach the SPEX-HS cable *before* you turn on the node. If you did not attach the cable within 30 seconds of turning on the node:

- a. **Attach the SPEX-HS cable to the SPEX-HS net module.**
- b. **Turn the ASN power off and then on again.**

If other ASNs are connected to the SPEX-HS cable, you do not need to cycle the power on those nodes; it is only necessary for nodes that do not have the SPEX-HS cable attached within 30 seconds of powering on.

2. **Verify that the stack is properly cabled, and that the connectors on the SPEX-HS cable are fully inserted into the connectors on the SPEX-HS net modules.**

Refer to the installation manual that shipped with the SPEX-HS net module for information about attaching the SPEX-HS cable.

3. **Make sure each ASN in the stack has a unique slot ID.**

Refer to Chapter 1 for information about setting the slot ID.

4. **Verify that the SPEX-HS net module is installed in Position 4 in each ASN in the stack. Also make sure that the net module is properly seated in its connector on the system board.**

If the SPEX-HS net module is not in Position 4, refer to the installation manual that shipped with your net module for instructions on how to remove the net module from its current position and install it in the correct position.

5. **Make sure no ASN in the stack is failing diagnostics other than the SPEX-HS failure. If any ASN in the stack fails with a non-SPEX-HS failure, do the following:**
 - a. **Remove the SPEX-HS cables from the failed ASN.**
 - b. **Make sure the Flash memory card (with a valid boot image and configuration file) is installed in one of the remaining nodes in the stack.**
 - c. **Cycle the power (turn the ASN off and then on again) on any node that had a SPEX-HS failure.**

If the remaining nodes in the stack pass powerup diagnostics and do not show a SPEX-HS failure, then the ASN that you removed from the stack has a problem that corrupts the stack.

Solving Technician Interface Connection Problems

If the ASN and net module LEDs do not indicate a problem (that is, they indicate that the ASN has booted), but you are unable to access the ASN from the Technician Interface, check the Technician Interface connection by verifying that

- The console or modem is properly connected to the ASN. Refer to Chapter 1 for instructions on setting up console and modem connections.
- The console or modem is working properly.
- The router's configuration file correctly specifies either a modem (with correct modem settings) or console for the specific ASN slot to which you are trying to connect. To check the configuration file, use either the Technician Interface or Site Manager from a working ASN.
- The ASN (or at least one ASN in the stack) contains a Flash memory card with a valid boot image and configuration file.
- If the ASN is in a stack, each node in the stack has a unique slot ID. Refer to Chapter 1 for information on setting the slot ID.

If the problem persists, contact your local Bay Networks Technical Response Center.

Appendix B

Configuring the ASN for Netboot and Directed Netboot

This appendix explains how to

- Use the **ifconfig** command to configure the node's initial IP interface to the network. You need this information to complete the procedure in "Using Netboot," in Chapter 2.
- Use the **bconfig** command to specify the location and name of the router's software image and configuration file. You need this information to complete the procedure in "Using Directed Netboot," in Chapter 2.

Ask your network administrator for the **ifconfig** and **bconfig** commands for the ASN at your site. (Your network administrator has information about these commands in *Connecting ASN Routers and BNX Platforms to a Network*.)

Using the ifconfig Command

You can use the **ifconfig** command to

- Configure the ASN's initial IP interface to the network.

Make sure that the initial IP interface is a synchronous interface. You also use the same procedure to configure other synchronous interfaces for the network booting procedure.

- Configure Ethernet interfaces for the network booting procedure.
- Enable or disable network booting on an interface.

The following sections describe each use of the **ifconfig** command.

Configuring the Initial IP Interface

To netboot the ASN, you must first configure the node's initial IP interface to the network using the following command:

```
ifconfig [-s<slot>] [synchronous options] <interface> <ip_addr> <subnet_mask>  
[<next_hop>]
```

where [*synchronous options*] indicates some combination of the following settings:

```
[-d | -fr [ -annexd | -annexa | -lmi ] | -int_clk]
```



Note: You must insert a space to separate each command option from the next.

You can use the same command format to configure other synchronous interfaces on the ASN for network booting.

Configuring a Synchronous Interface for Network Booting

[Table B-1](#) describes the **ifconfig** command settings for configuring a synchronous interface.

Table B-1. ifconfig Command Settings for a Synchronous Interface

Setting	Description
Slot setting:	
-s <slot>	Specifies the slot containing the interface you want to configure. The slot corresponds to the ASN slot ID, which can be 1 through 4. If you omit this argument, ifconfig uses the current slot.
Default setting:	
-d	Resets the node's IP interface. This setting tries four WAN configurations in the following order until it finds the correct type for the ASN connection to the network: 1. Bay Networks HDLC encapsulation (Bay Networks Standard Point-to-Point) with external clocking 2. Frame Relay Annex D 3. Frame Relay LMI 4. Frame Relay Annex A
Frame Relay settings:	
-fr	Configures the ASN synchronous port as a Frame Relay connection. With this setting, use one of the following options to specify a DLCMI setting: -annexd , -annexa , or -lmi .
-annexd -annexa -lmi	When one of these options is used with the -fr setting, it specifies a DLCMI setting. Use the same setting as the network to which the ASN's Frame Relay interface is connected. The default setting for Frame Relay is -annexd .
Internal Clocking setting:	
-int_clk	Sets the ASN synchronous port to internal clocking at 1.25 MB/s. If you do not specify the -int_clk setting, the ASN defaults to external clocking.
IP Connector setting:	
<interface>	Specifies the type of IP connector you are configuring. Use com <module><connector>, where <i>module</i> corresponds to the position of the net module in the ASN (1 through 4) and <i>connector</i> corresponds to the port (1 or 2).

(continued)

Table B-1. ifconfig Command Settings for a Synchronous Interface *(continued)*

Setting	Description
IP Address settings:	
<code><ip_addr></code>	Specifies the IP address of the interface you set with <code><interface></code> . Provide this address in dotted decimal notation.
<code><subnet_mask></code>	Specifies the IP subnet mask of the interface you selected with the <code><interface></code> setting. Provide this address in dotted decimal notation.
<code><next_hop></code>	Specifies the IP address of the next-hop router. Provide this address in dotted decimal notation. You need to specify this address only if there are intermediate routers between the ASN and the BOOTP server.

Configuring an Ethernet Interface for Network Booting

To configure an Ethernet interface for network booting, use the following command format:

ifconfig [-s<slot>] [-d] <interface> <ip_addr> <subnet mask>

Table B-2 describes the **ifconfig** command settings for configuring an Ethernet interface.

Table B-2. ifconfig Command Settings for an Ethernet Interface

Setting	Description
Slot setting:	
<code>-s<slot></code>	Specifies the slot containing the interface you want to configure. The slot corresponds to the ASN slot ID, which can be 1 through 4. If you omit this argument, ifconfig uses the current slot.
Default setting:	
<code>-d</code>	Resets the node's IP interface. Resetting an Ethernet interface makes it inactive in the network booting process. (The output of the getcfg command shows the default as "None.")

(continued)

Table B-2. ifconfig Command Settings for an Ethernet Interface (*continued*)

Setting	Description
IP Connector setting:	
<code><interface></code>	Specifies the type of IP connector you are configuring. Use xcvr <code><module><connector></code> , where <i>module</i> corresponds to the position of the net module in the ASN (1 through 4) and <i>connector</i> corresponds to the port (1 or 2).
IP Address settings:	
<code><ip_addr></code>	Specifies the IP address of the interface you set with <code><interface></code> . Provide this address in dotted decimal notation.
<code><subnet_mask></code>	Specifies the IP subnet mask of the interface you selected with the <code><interface></code> setting. Provide this address in dotted decimal notation.

Enabling and Disabling Interfaces with ifconfig

To enable or disable an interface in the network boot process, use the following command formats:

ifconfig [-s`<slot>`] -disable `<interface>`

ifconfig [-s`<slot>`] -enable `<interface>`

[Table B-3](#) describes the **ifconfig** command settings for enabling or disabling an interface.

Table B-3. ifconfig Command Settings for Enabling or Disabling an Interface

Setting	Description
<code>-s<slot></code>	Specifies the slot containing the interface you want to enable or disable. The slot corresponds to the ASN slot ID, which can be 1 through 4. If you omit this argument, ifconfig uses the current slot.
<code><interface></code>	Specifies the type of IP connector you are enabling or disabling. Use com <code><module><connector></code> (for synchronous media), or xcvr <code><module><connector></code> (for Ethernet media), where <i>module</i> corresponds to the position of the net module in the ASN (1 through 4) and <i>connector</i> corresponds to the port (1 or 2).

Using the bconfig Command

To use Directed Netboot, you must use the **bconfig** command to specify

- The IP address of the server where the router's software image or configuration file or both reside
- The full path name of the software image and configuration file

You must use the **bconfig** command once to specify the location of the software image, and again to specify the location of the configuration file.

Use one of the following formats for the **bconfig** command:

```
bconfig [image | config] [local | network [<ftp_host> <ftp_pathname>]]  
bconfig -d [image | config]
```

[Table B-4](#) gives a complete description of the **bconfig** command.

Table B-4. bconfig Command Options

Option	Description
image	Specifies the router's software image.
config	Specifies the router's configuration file.
local	Indicates that the specified file (image or config) resides in the router's local file system.
network	Indicates that the specified file resides on a network server.
<ftp_host>	Specifies the IP address of the host where the image or configuration file resides. If both the software image and configuration file reside on the network, the files must reside on the same host. In other words, you must specify the same IP address for the <i>ftp_host</i> for both files.

(continued)

Table B-4. bconfig Command Options *(continued)*

Option	Description
<code><ftp_pathname></code>	Specifies the complete path name of the software image or configuration file on the host.
-d	Resets the default values for the software image or configuration file. The command bconfig -d image tells the router to look for the image file locally, and nullifies the IP address and path name for the file. The command bconfig -d config tells the router to obtain the configuration file over the network, and nullifies the IP address and path name for the file. Without the IP address and path names, the router uses Netboot rather than Directed Netboot. However, if you want to get one file locally while using Directed Netboot for the other file, you can use the bconfig commands as the following examples show: <pre> bconfig image local bconfig config network 21.3.5.62 /usr/asnstartup/config </pre> or <pre> bconfig image network 21.3.5.62 /usr/mykernel.exe bconfig config local </pre>

Appendix C

Using Local Boot (the Quick-Start Procedure)

This appendix explains how to local-boot the ASN using the Quick-Start procedure. You need this information to complete the procedure in “Using Local Boot (the Quick-Start Procedure),” in Chapter 2. The Quick-Start procedure is the initial configuration that gets a Bay Networks router up and running on the network. The procedure enables the Internet Protocol (IP), so that the router can connect to Site Manager.

To quick-start the ASN, you run the *install.bat* script and enter information at the prompts. The ASN automatically selects options for some prompts, and you can accept default values for many of the other prompts.

To aid you in answering Quick-Start prompts, fill out the following worksheets with assistance from your network administrator. The worksheets contain all the options that appear at each prompt, and space for you to enter your information.

The last two sections in this appendix, “Using the Quick-Start Commands” and “Running the Quick-Start Script,” provide additional information about the Quick-Start procedure.

Be sure to fill out the worksheets and read all sections of this appendix before you begin the Quick-Start procedure.



Note: Contact your network administrator for assistance in selecting worksheet options.

Filling Out the Quick-Start Worksheets

The *install.bat* script provides many options for configuring the ASN on a network. Because typical remote access uses a synchronous interface over a wide-area connection, this section lists *only* the options involved with a synchronous configuration.



Note: This section only provides worksheets for a synchronous interface configuration over a wide-area connection. It does not contain worksheets for LAN configuration options.

Use the following worksheets to organize the network information you need. Even though this section has many worksheets, you only need to fill out

- The Global Information Worksheet: This worksheet lists options common to all synchronous interface configurations.
- One Router Protocol Worksheet: This worksheet lists specific options for the RIP, OSPF, and Static Route configurations.
- One Wide-Area Protocol Worksheet: This worksheet lists specific options for Bay Networks proprietary Point-to-Point Protocol (PPP), Frame Relay, Standard PPP, and Switched Multimegabit Data Service (SMDS) configurations.

We suggest the following procedure when you fill out the worksheets:

1. **Fill out the Global Information Worksheet completely. (These options are the same for all synchronous interface configurations.)**
2. **From your protocol selections on the Global Information Worksheet, fill out *only* the related worksheets in the “Router Protocol Worksheets” and “Wide-Area Protocol Worksheets” sections.**

For example, if you select RIP as your routing protocol and Frame Relay as your wide-area protocol, you need only fill out the worksheets pertaining to these specific protocols.

3. **Go to the sections “Using the Quick-Start Commands” and “Running the Quick-Start Script.”**

Global Information Worksheet

This section contains requested information and possible options for configuring a synchronous interface on the ASN.

Global Information Worksheet

Step	Requested Information	Options	Your Information
1	Specify the slot number where the net module resides.	The ASN lists the slots and modules that are currently available. Enter the slot number that corresponds to the slot ID of the ASN. Valid values are 1 through 4.	
	Enter the module number.	The module corresponds to the position of the net module in the ASN. Enter the module number that corresponds to the Dual Sync net module. Valid values are 1 through 4.	
2	Specify the net module and network interface information for the initial IP connection to Site Manager.	Specify information for the Dual Sync net module.	
	Enter connector number [1]:	1. COM1 2. COM2	
	Enter clock source number [2]:	1. Internal 2. External	
	Enter circuit name [S#]:	We recommend a circuit name for the COM interface you select (for example, S121 for COM 1 and S122 for COM 2).	Press the Return key.

(continued)

Global Information Worksheet *(continued)*

Step	Requested Information	Options	Your Information
3	Enter IP address in dotted decimal notation:	Enter the IP address for the COM interface.	
	Enter the subnet mask in dotted decimal notation:	Enter the subnet mask for the COM interface IP address.	
	Is the router connected to the same local area network as the Site Manager workstation? (y/n) [n]:	y(es) n(o)	Press the Return key.
	Enter routing protocol number [1]:	1. RIP 2. OSPF 3. Static Route to Site Manager	(Complete the worksheet for the protocol you select.)
	Enter wide-area protocol number [1]:	1. Bay Networks Point-to-Point Protocol (proprietary) 2. Frame Relay 3. Point-to-Point Protocol Standard (PPP) 4. Switched Multimegabit Data Service (SMDS)	(Complete the worksheet for the protocol you select.)
	Do you want to set SNMP community management? (y/n) [n]:	y(es) n(o) Setting up SNMP community management is optional.	
4	TFTP default volume [1]:	Enter the ASN slot ID that corresponds to the default volume.	
5	Do you want to enable Technician Interface Telnet? (y/n) [n]:	y(es) n(o) Enabling Technician Interface Telnet is optional.	
6	FTP default volume [1]:	Enter the ASN slot ID that corresponds to the default volume.	
7	Do you want to save this configuration to a file? (y/n) [y]	y(es) n(o)	Press the Return key.
	Enter filename [<i>startup.cfg</i>]:	We recommend using the default file name.	Press the Return key.

Router Protocol Worksheets

This section contains requested information and possible options relating to the router protocol choices on the Global Worksheet.

RIP Worksheet

Requested Information	Options	Your Information
Should RIP listen to the default route? (y/n) [n]:	y(es) n(o) Note: RIP listens to a specific network or subnet route where Site Manager is located. Answering y(es) forces RIP to also listen to the default route (0.0.0.0). This is useful when no specific route is available in the RIP updates that the router receives.	

OSPF Worksheet

Requested Information	Options	Your Information
Enter the OSPF router ID in dotted decimal notation [the router provides the IP address of the COM port]:	Enter an IP address to uniquely identify the router in the OSPF domain. We suggest using the default IP address provided.	
Enter the OSPF area ID in dotted decimal notation [0.0.0.0]:	Enter the area ID. This ID must match the area ID of the router's neighbor. Note: The backbone area ID is always 0.0.0.0.	
Enable Simple Password authentication? (y/n) [n]:	y(es) n(o) Note: If you answer y(es), the router requests a password.	Password: _____

(continued)

OSPF Worksheet *(continued)*

Requested Information	Options	Your Information
Enter OSPF MTU size selection [1]:	1. Default 2. Ethernet size (Bay Networks Series 5 compatible)	
Enter OSPF interface type selection [1]:	1. Broadcast 2. NBMA (Non-Broadcast Multi-Access) 3. Point-to-Point Note: When using a wide-area protocol other than Bay Networks Proprietary PPP, we suggest selecting NBMA.	
Enter decimal value in seconds for Hello Interval [10]: Note: This value must match all other interfaces in the OSPF area for connection to take place.	We suggest the following intervals: Broadcast -- 10 seconds Point-to-Point -- 15 seconds NBMA -- 20 seconds	
Enter decimal value in seconds for Router Dead Interval [40]: Note: This value must match all other interfaces in the OSPF area for connection to take place.	We suggest the following intervals: Broadcast -- 40 seconds Point-to-Point -- 60 seconds NBMA -- 80 seconds	
Enter decimal value for Router Priority [1]: (For Broadcast or NBMA only)	Enter a router priority value. The lower the value (above zero), the higher the priority. Note: If you set the router priority to zero (0), the router is not eligible to become the designated router on this particular network.	
Enter decimal value in seconds for Poll Interval [20]: (For NBMA only)	Enter the largest number of seconds allowed between Hello packets sent to an inactive NBMA neighbor. We suggest a 20-second interval.	

(continued)

OSPF Worksheet *(continued)*

Requested Information	Options	Your Information
Enter IP address of neighbor in dotted decimal notation or enter q to quit: (For NBMA only)	Enter the addresses for all NBMA neighbors you want the router to communicate with. Type q and press the Return key when you finish entering addresses.	
Enter IP address of neighbor in dotted decimal notation: (For PPP only)	Enter the addresses for the PPP neighbors you want the router to communicate with.	

Static Route to Site Manager Worksheet

Requested Information	Options	Your Information
Destination Network [0.0.0.0]:	Enter the gateway address of the destination network. An address of 0.0.0.0 specifies the default route.	
Destination Network Mask [0.0.0.0]:	Enter the subnet mask of the destination network. A subnet mask of 0.0.0.0 specifies the default route.	
Next-Hop Address:	Enter a next-hop address. All static routes require a next-hop address in the same subnet as the initial IP interface.	

Wide-Area Protocol Worksheets

This section contains requested information and possible options relating to wide-area protocol choices on the Global Worksheet.

Bay Networks Proprietary PPP Worksheet

Requested Information	Options	Your Information
Enter BofL (Breath of Life) timer value (1-60) [5]:	Enter the maximum amount of time that can elapse between the successful transmission of BOFL messages.	
Enter Local Address Selection [3]:	1. DCE 2. DTE 3. EXPLICIT Note: Reverse local and remote address values when configuring the device at the other end of the circuit. (Exception: When connecting to a Series 5 router that uses DCE/DTE addressing, use the <i>same</i> local address value.)	
Enter Remote Address Selection [3]:	1. DCE 2. DTE 3. EXPLICIT Note: Reverse local and remote address values when configuring the device at the other end of the circuit. (Exception: When connecting to a Series 5 router that uses DCE/DTE addressing, use the <i>same</i> local address value.)	

Frame Relay Worksheet

Requested Information	Options	Your Information
Enter Management type [3]:	1. DLCMI none 2. Rev 1 LMI 3. ANSI T1 617D 4. CCITT Annex A 5. LMI switch 6. Annex D switch 7. Annex A switch	
Enter Addressing type [4]:	1. ADDR Q.921 2. ADDR Q.922 (MARCH '90) 3. ADDR Q.922 (NOVEMBER '90) 4. ADDR Q.922	
Enter Address field length:	2. Two bytes 3. Three bytes 4. Four bytes	
Enter DLCI number [30]: (For DLCMI None, LMI Switch, Annex D Switch, and Annex A Switch only)	Enter the permanent virtual circuit (PVC) number. Note: The valid range for the DLCI number is from 16 to 1007.	

PPP Standard Worksheet

Requested Information	Options	Your Information
Enter Remote IP address in dotted decimal notation:	Enter the IP address of the peer connection.	
Do you want to turn on the PPP echo function? (y/n) [n]:	y(es) n(o)	
Enable Local Authentication Protocol? (y/n) [n]:	y(es) n(o) Note: If you answer y(es), the router requests a PAP ID for this interface.	

(continued)

PPP Standard Worksheet *(continued)*

Requested Information	Options	Your Information
Does the Remote Peer have PAP authentication enabled? (y/n) [n]:	y(es) n(o) Note: If you answer y(es), the router requests the PAP ID for the remote interface.	
Enable the LQR (Link Quality Reporting) Protocol? (y/n) [n]:	y(es) n(o) Note: Link Quality Monitoring on a Bay Networks Series 5 router is not compatible with this feature, because the Series 5 LQ functions are based on older, incompatible RFCs.	
Enable use of the Remote Peer router's LQR Timer? (y/n) [y]: (For LQR Protocol only)	y(es) n(o) Note: If the LQR Timer is enabled, the remote peer router maintains its own LQR Timer for this interface. When the LQR Timer is disabled, the ASN is responsible for maintaining the timer for this interface.	
Number of seconds (1-120) [3]: (For LQR Protocol only)	Enter the maximum number of seconds between the transmission of LQR packets.	
Enter [inbound] success rate percentage (1-100) [90]: (For LQR Protocol only)	Enter the minimum acceptable success rate (percentage) of packets transmitted by the peer router and received on this interface over the last 5 LQR reporting periods.	
Enter [outbound] success rate percentage (1-100) [90]: (For LQR Protocol only)	Enter the minimum acceptable success rate (percentage) of packets transmitted by this interface and received by the peer router over the last 5 LQR reporting periods.	

SMDS Worksheet

Requested Information	Options	Your Information
Enter 10-digit individual address:	Enter the individual address assigned to you by your SMDS service provider.	
Enter 10-digit group address:	Enter the group address assigned to you by your SMDS service provider.	
Enter 10-digit ARP address:	Enter the Address Resolution Protocol (ARP) address assigned to you by your SMDS service provider.	

Using the Quick-Start Commands

Refer to [Table C-1](#) when quick-starting the ASN.

Table C-1. Quick-Start Commands

To Do the Following	Action	Details
Accept a default value.	Press the Return key.	Your console displays default values in brackets, for example, [E11].
Repeat a step (for example, if you make a mistake).	Press Control-C . Press n .	When prompted, Terminate script y/n? press the n key. You are returned to the beginning of the step so that you can reenter the information.
Stop the Quick-Start installation procedure.	Press Control-C . Press y .	When prompted, Terminate script y/n? press the y key. The Quick-Start procedure is terminated and you are returned to the Technician Interface prompt. To restart the Quick-Start procedure, you must reboot the ASN (using <i>ti_asn.cfg</i>) by entering boot and pressing the Return key.

Running the Quick-Start Script

After you enter **run install.bat**, the ASN progresses through the Quick-Start script as follows:

1. The ASN prompts you for the initial Global Worksheet information.
2. After you select a router protocol option, the ASN prompts for specific protocol information.
3. After finishing the router protocol configuration, the ASN requests a wide-area protocol selection.
4. After you select a wide-area protocol, the ASN prompts for specific protocol information.
5. After finishing the wide-area protocol configuration, the ASN prompts for the rest of the Global Worksheet information.

When the configuration is complete, the ASN runs through a test procedure for the IP interface. When the test is complete, the following prompt appears:

Enter IP address of Site Manager workstation:

Obtain this information from your network administrator.

Appendix D

Technical Specifications

This appendix provides

- Physical, electrical, and environmental specifications
- Requirements for european operation

Physical Specifications

The dimensions of the ASN are as follows:

- Height: 4.33 in. (10.99 cm)
- Width: 17.5 in. (44.45 cm)
- Depth: 17.0 in. (43.18 cm)

Your installation site must provide a certain amount of free space around the ASN to dissipate heat. The minimum clearance requirements for installing the ASN at your site are as follows:

- Left side: 2 in. (5.08 cm)
- Right side: 2 in. (5.08 cm)
- Top: none
- Back: 12 in. (30.48 cm)
- Back (for servicing): 24 in. (60.96 cm)

You can determine the total space needed to install the ASN at your site by adding the ASN dimensions to the minimum clearance measurements.

If you are installing your ASN in an electronic enclosure rack, make sure the rack meets the following specifications:

- Heavy-duty steel construction
- Electronic Industries Association (EIA) standard hole-spacing
- Panel width of 19.5 in. (50 cm)
- Depth of 24.15 in. (64 cm)



Caution: If the rack is equipped with panels, doors, or a top panel, you must screen them to prevent overheating.

Electrical Specifications

Your installation site must meet the following power requirements:

- Proximity to wall receptacle: within 6 ft (1.8 m) of the ASN
- Voltage: 100 to 240 V ac at 4.0 A maximum

Table D-1 lists the wall receptacle requirements.

Table D-1. Wall Receptacle Requirements

Country	Receptacle	Voltage
United States/Canada	National Electrical Manufacturers Association (NEMA) 5-15R standard receptacle.	100 – 120 V
Any other country	Your ASN distributor attaches the necessary plug to the power cable and informs you of the receptacle you need.	200 – 240 V

Environmental Specifications

The environmental requirements of the ASN are as follows:

- Altitude: 0 to 8,000 ft (0 to 2,438.4 m)
- Humidity: 20% to 80%, noncondensing
- Temperature: 32° to 104°F (0° to 40°C) stable

The thermal output of the ASN is 850 Btu/hr, maximum.

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